BIBLIOGRAPHY OF
Technical Reports

September 17, 1954
Vol. 22, No. 3

Contents

Cartography 97
Chemicals and Allied Products 97
Drugs and Pharmaceuticals 97
Agricultural Chemicals 98
Plastics and Plasticizers 98
Paints, Varnishes and Lacquers 99
Chemical Engineering and Equipment 100
Miscellaneous Chemicals 100
Electrical Machinery 103
Communication Equipment 103
Electronics 103
Generators, Motors, Transmissions 106
Miscellaneous 106
Food and Kindred Products 109
Fuels and Lubricants 110
Highways and Bridges 110
Instruments 111
Lumber and Wood Products 115
Machinery 116
Medical Research and Practice 117
Metals and Metal Products 120
Meteorology and Climatology 123
Minerals and Mineral Products 124
Ordnance and Accessories 125
Packing and Packaging 127
Personnel Aptitude Testing 127
Photographic and Optical Goods 127
Physics 128
General 128
Nuclear 131
Physiology 132
Psychology 133
Structural Engineering 134
Textiles and Textile Products 137
Transportation Equipment 137
Aeronautics 137
Aircraft 137
Patents 139
Instruments 139
Nuclear Reports of Interest to Industry 139
..... 140

U. S. DEPARTMENT OF COMMERCE

HOW TO ORDER REPORTS

- Order by PB report number.
- Orders for reports available in **mimeographed** or printed form (identified as "mimeo") should be addressed to the U. S. Department of Commerce, Office of Technical Services, Washington 25, D. C. Check or money order must accompany order and be made payable to the **Treasurer of the United States.** For prompt service and convenience, use order blank A.
- Orders for reports in **microfilm** or **photostat** form should be addressed to the Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C. Check or money order must accompany order and be made payable to the **Librarian of Congress.** Indicate for each item which type of reproduction is desired. For prompt service and convenience use order blank B.
- Orders for publications available from other sources should be addressed to the organization indicated. Do not use order blanks A or B and do not send orders to OTS or the Library of Congress.
- Foreign purchasers of reports, other than those in Canada, Cuba, and Mexico, should include an additional amount for postage according to the following scales:

  Printed and photocopied reports: Approximately 4 pages per ounce.

  Microfilm: Approximately 50 frames (one frame per page) per ounce.

  Rates vary for different countries. It is the purchaser's responsibility to compute postage.

The BIBLIOGRAPHY OF TECHNICAL REPORTS is issued monthly by the Office of Technical Services, U. S. Department of Commerce. Subscription: $6 per year. Foreign subscribers, other than those in Canada, Cuba, and Mexico, are requested to remit $3 additional for foreign postage. Individual copies 60 cents. Use order blank A.

The PB reports listed in the BIBLIOGRAPHY have been received from civil and military agencies of the United States Government and from cooperating foreign governments. Security restrictions have been lifted on all reports listed. PB is the abbreviation for Publication Board, which was established to select and publicize these reports. For further information, see inside back cover.

Items of special interest to smaller business firms are abstracted in the monthly TECHNICAL REPORTS NEWSLETTER, available from OTS at $1 a year. Individual copies 10 cents.

The Office of Technical Services is responsible, under Public Law 776, 81st Congress, for aiding in the collection and dissemination of technical reports of benefit to American science and industry. Except to the extent indicated by acknowledgment of authorship, the Office does not edit reports, nor does it accept responsibility for information and opinions contained in them. Patents may cover the subject matter of any report; the reader is advised to make suitable patent searches before developing applications based on the reports.

Contents of this publication are not copyrighted and may be reprinted freely. Mention of source will be appreciated.

Published with the approval of the Director, Bureau of the Budget, September 29, 1952

U. S. DEPARTMENT OF COMMERCE
Sinclair Weeks, Secretary

BUSINESS AND DEFENSE SERVICES ADMINISTRATION
Charles F. Honeywell, Administrator

OFFICE OF TECHNICAL SERVICES

U. S. DEPARTMENT OF COMMERCE

OFFICE OF TECHNICAL SERVICES

BIBLIOGRAPHY OF Technical Reports

Vol. 22, No. 3 September 17, 1954

CARTOGRAPHY

Video mapping as a radar tool, by S. F. Norris. U. S. Air Force. Air Research and Development Command. Rome Air Development Center, Griffiss Air Force Base, Rome, N. Y. Mar 1954. 26p photos, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114268

The use of video mapping as a radar tool, the desirable characteristics of the components and the problems that arise in the design of a video mapping system are discussed in this report. AAF RADC TN 54-6.

CHEMICALS AND ALLIED PRODUCTS

Drugs and Pharmaceuticals

Conference on neuromuscular blocking action of anticholinesterase compounds, held at Medical Laboratories, Army Chemical Center, Maryland on 6-7 Oct 1952. U. S. Chemical Corps. Medical Laboratories, Army Chemical Center, Md. Aug 1953. 96p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photocopy $12.75. PB 114563

Contents: Eserine-veratrine interactions on the striated muscle fiber, by Alexander Sandow and Geraldine Kiebel. - Some aspects of muscle conduction, by Robert W. Ramsey. - Demonstration of the distribution of acetylcholine into the squid axon by a new chemical method, by Byron B. Clark. - Probable mechanism of neuromuscular and ganglionic block, by Theodore Koppanyi. - Curare and anti-curare compounds, by Klaus Unna. - Protection against anticholinergic and neuromuscular-blocking drugs in mice, by John R. Lewis. - Possible approach to the development of acetylcholine antagonists, by Geoffrey Woodard. - New anticonvulsants in the treatment of anticholinesterase poisoning, by C. C. Pfeiffer. - Appendix I. Analytical method for atrolactamide in biological builds, by T. R. Sherrod and H. I. Zubaidi. - Appendix II. Blood and urine levels after atrolactamide, by H. I. Zubaidi and T. R. Sherrod. - Neuromuscular effects of organic phosphate anticholinesterase compounds in man, by David Grob. - Discussion.
1. Cholinesterase - Physiological effects 2. Neuromuscular system - Effect of anticholinesterase compounds 3. Muscles - Paralysis - Therapy 4. Muscles - Physiology 5. Choline, Acetyl - Neurological effects 6. CC MD SR 27.

Effect of carbonic anhydrase inhibition on respiration, by Joseph F. Tomashefski, Herman I. Chinn, Robert T. Clark, Jr. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Jun 1954. 6p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114587

Intravenous injection into anesthetized dogs of 25-100 mg./kg. sodium acetazolamide (Diamox), a carbonic anhydrase inhibitor, produced an acidosis characterized by a fall in arterial pH and an increase in urinary pH. Human subjects receiving 25 mg./kg. orally demonstrated no respiratory changes although the urinary pH and the eosinophil count rose markedly. AAF SAM Proj 21-1201-0013, Report no. 6.

Penetration of BAL into the aqueous humor of the eye, by Charles Harris, Bernard S. Cohen, George Cole. U. S. Chemical Corps. Medical Laboratories, Army Chemical Center, Md. Aug 1953. 12p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114562

Project no. 4-08-02-013.
1. 1-Propanol, 2,3 - Dimercapto - Absorption 2. Cornea - Absorption of 1-Propanol, 2,3-Dimercapto 3. Hyaluronidase - Effect on absorption of 1-Propanol, 2,3-Dimercapto 4. CC MD RR 210.

Physiological effects of atropine and potential atropine substitutes, by Sid Robinson. U. S. Chemical Corps. Medical Laboratories, Army Chemical Center, Md. Aug 1953. 152p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.25, Photocopy $20.25. PB 114564

The effects on men of intramuscular doses of 2 mg. atropine sulfate, 0.5-2 mg. metropine, 8 mg. parpanit, 4 mg. lergigan and 5 mg. artane were determined in 2 series of work experiments. Contract no. DA 18-108-CML-2397. CC ML CR 15.

Toxicity and pharmacology of boron hydrides, a status summary of work performed up to about 1 Jan 1953, by J. H. Wills. U. S. Chemical Corps. Medical Laboratories, Army Chemical Center, Md. Feb 1953. 8p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114689

The boron hydrides (diborane, pentaborane and decaborane) are highly toxic compounds which must be handled with due respect for their toxicity. The chief danger from diborane appears to arise from the local actions of the inhaled gas on the lungs. The chief danger from pentaborane and decaborane probably lies in the production of convulsions. Poisoning by pentaborane and decaborane can occur by absorption from skin and conjuctival surfaces as well as by inhalation. No specific therapy is known for poisoning by any of the boron hydrides. Project no. 4-61-14-002: Health hazards of military chemicals. CC MD SR 15.

Agricultural Chemicals

Report of symposium V: Aerosols. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. 1953. 149p photos, drawings, diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $3.00. PB 111411

Contents: no. 1. Production of condensation nuclei, by B. Vonnegut. no. 2. Some factors in colored smokes: Particle size and color measurement, by M. A. Fisher. - no. 3. Errors due to anisokinetic sampling of aerosols, by H. H. Watson. - no. 4. Smoke-stack problem through wind tunnel models, by G. H. Strom and J. Halitsky. - no. 5. Synergistic effects of aerosols: Particulates as carriers of toxic vapors, by C. W. La Belle. - no. 6. Physical and biological behavior of aerosols in closed chambers, by C. A. Boyd and H. Forstat. - no. 7. Aggregation of aerosols, by J. M. Dalla Valle, Clyde Orr, Jr. and B. L. Hinkle. - no. 8. Mass subsidence, by P. Debye (to be issued as a supplement). - no. 9 to be published elsewhere. - no. 10. Forward angle-scattering camera which measures aerosol polydispersity in range 0.1 to 0.5 micron, by V. K. La Mer and P. K. Lee.
1. Aerosols - Production 2. Aerosols - Research 3. Aerosols - Synergistic effects 4. Aerosols - Particle size 5. Aerosols - Sampling 6. Cameras, Photomicrographic - Design 7. Nuclei, Silver Iodide - Production 8. Smokes, Colored - Production.

Theoretical investigation of the growth of aerosol particles by diffusion, by H. L. Frisch and F. C. Collins. Polytechnic Institute of Brooklyn. Dept. of Chemistry, Brooklyn, N. Y. n.d. 15p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114046

The growth rate and radius of an aerosol particle in a turbulent supersaturated fluid is calculated on the basis of a simple "stagnant film" model, in the presence of time-dependent, homogeneously distributed sources in the diffusion field. Scientific report no. 2 under Contract no. AF 19(122)-412.

Plastics and Plasticizers

Changes in some physical properties of polyethylene by pile irradiation at 80°C, an A.E.R.E. report, by M. Ross. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Apr 1954. 15p drawing, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 114692

HD. 1173. S. O. code no. 70-674-1-65.
1. Polyethylenes - Irradiation - Gt. Brit. 2. Polyethylenes - Physical properties - Gt. Brit. 3. Atomic power - Research - Gt. Brit. 4. AERE M/R 1401.

Comparative study of specifications and tests on polyethylene film for balloon use. Interim report no. 1 under Contract no. AF 19(604)-718, by L. W. Sheridan. General Mills, Inc. Engineering Research and Development Dept., Minneapolis, Minn. Dec 1953. 7p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 113853

Specifications for 2 mil polyethylene film for balloon use were submitted to the Air Force on 9 September 1953. These were supplemented with specifications on 1 mil, and 1.5 mil, and 2.0 mil laminated film on 23 November 1953. A comparison between these specifications and a brief analysis of the data from which they were derived is contained in the report. Report no. 1262.

Development of furane resin glass fabric base plastic laminates, by John Delmonte, John Knudsen, Leland Smith. Furane Plastics, Inc., Glendale, Calif. Nov 1953. 33p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111418

In this report the influence of various catalysts upon the resin are shown. In the preparation of 1/8th inch thick laminates, furane resins activated with acid catalysts required post curing to achieve good physical properties. Contract no. AF 33(600)-17708. AAF WADC TR 53-16.

Floor finishes based on polyvinyl chloride (PVC) and polyvinyl acetate (PVA). Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Apr 1954. 6p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.10. PB 114287

S. O. code no. 72-22-0-65.
1. Polyvinyl acetate - Uses - Gt. Brit. 2. Polyvinyl chloride - Uses - Gt. Brit. 3. Floors and flooring, Plastic - Gt. Brit. 4. DSIR BRD 65.

Interim report, May 1 to July 31, 1953, under Contract Nonr-1129(00) Project NR 036-012. Polytechnic Institute of Brooklyn. Institute of Polymer Research, Brooklyn, N. Y. Jul 1953. 22p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114559

Two polyvinyl acetate samples of weight average molecular weights of 85,000 and 190,000 possessing a wide molecular weight distribution but, presumably, a low degree of branching were found to have increased their molecular weights by factors of 2-3 when converted into formals. Two other polyvinyl acetates of similar molecular weights and of low degree of branching show an increase in viscosity on butyral formation which, too, has to be interpreted as a sign of molecular weight increase. Solvent systems more suitable for precise measurements in solution will have to be found. The theory of adsorption of macromolecules with special consideration of their flexibility has been further worked on.

Progress report, Aug 1 to Oct 31, 1953, under Contract Nonr-1129(00), Project NR-036-012. Polytechnic Institute of Brooklyn. Institute of Polymer Research, Brooklyn, N. Y. Nov 1953. 5p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114390

Molecular weights of three polyvinyl acetates and two butyrals were determined by light scattering. Other work on hydrolyses, reacetylation, adsorption and oxidation of butyrals by chromic acid were continued.

Research studies of plastic compounds for casting, encapsulating and potting. Sixth quarterly progress report (Interim) for the period 15 Sep 1953 through 14 Dec 1953 under Contract no. DA-36-039-sc-42459, by Alfred K. MacKenzie and Elizabeth C. Dearborn. United States Testing Co., Inc. Boston Research Division, Boston, Mass. Jan 1954. 52p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114608

A major portion of the time available this period has been spent on the preparation of Resins 2244 and 2255. Case no. 2263. Dept. of the Army project no. 3-93-00-503. Signal Corps project no. 32-2005-A. Includes a brief summary of all work accomplished during the entire study, ending 14 Dec 1953.

Paints, Varnishes and Lacquers

Aircraft material specification: Engine cylinder protective (wax thickened). Gt. Brit. Ministry of Supply. Jan 1954. 3p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 114455

Superseding MS DTD MS 791A.
1. Engines, Aircraft - Cylinders - Protective coatings - Specifications - Gt. Brit. 2. Coatings, Wax - Specifications - Gt. Brit. 3. Waxes - Specifications - Gt. Brit. 4. MS DTD MS 791B.

Aircraft material specification: Matt pigmented oil varnishes and primer. Gt. Brit. Ministry of Supply. Jan 1954. 4p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 114454

Superseding MS DTD MS 314A.
1. Varnishes - Specifications - Gt. Brit. 2. Primers, Paint - Synthetic - Specifications - Gt. Brit.
3. MS DTD MS 314B.

Effect of a two-dimensional pressure on the Curie point of barium titanate, by P. W. Forsbergh, Jr. Massachusetts Institute of Technology. Laboratory for Insulation Research. Oct 1953. 21p drawing, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114497

Contracts N5ori-07801 and N5ori-07858.
1. Barium titanate - Curie point - Effect of pressure 2. Barium titanate - Crystal structure
3. MIT LIR TR 74.

Volatile rust inhibitors, by H. R. Baker. U. S. Naval Research Laboratory. Mar 1954. 21p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111407

Varying degrees of protection of ferrous surfaces can be expected from suitable members of the following classes of compounds: aliphatic or aromatic acids; primary, secondary, and tertiary amines; amine salts of weak inorganic acids; hydroxy substituted aromatic acids and acid anhydrides; miscellaneous compounds such as nitromethane to nitropropane, morpholine, camphor, carbamides, and ammonium hydroxide; and any combination of compounds which on reaction yields any of the compounds mentioned in the series above. Because of the economy and simplicity of these compounds and the techniques of their use, they are finding wide

acceptance in military and industrial packaging procedures. NRL R 4319.

Chemical Engineering and Equipment

Construction of equipment for preparation and separation of lower halogenated silanes, by William H. Nebergall and John S. Peake. Indiana. University, Bloomington, Ind. Oct 1953. 7p drawing Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111425

The preparation of monobromosilane and dibromosilane is achieved by using a continuous catalytic furnace starting with silane. Apparatus is described as well as low temperature distillation equipment. Lucite windows are involved in shielding. Difficulties are outlined. An attempt is made at partial reduction of phenyltrichlorosilane using lithium aluminum hydride. Controlled bromination has resulted in good quantity yields of phenylbromosilane and phenyldibromosilane. Hydrolysis of phenylbromosilane was undertaken. The reaction between diphenyldisiloxane and phenyllithium resulted in tetraphenylsilane and triphenylhydroxysilane. Contract Nonr-908(02) NR 356-321.

Miscellaneous Chemicals

Chemical solids as diffusible coating films for visual indications of boundary-layer transition in air and water, by J. D. Main-Smith. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Feb 1950. 16p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.15. PB 114156

Cover date is 1954. S. O. code no. 23-2755.
1. Boundary layer - Transition point - Tests - Gt. Brit. 2. Air flow - Visibility - Gt. Brit. 3. Flow, Fluid - Boundary layer - Visibility - Gt. Brit. 4. Coatings, Chemical - Diffusion - Gt. Brit. 5. ARC RM 2755.

Colorimetric determination of nitrate in phosphate coating solutions, by L. O. Gilbert. U. S. Arsenal, Rock Island, Ill. Jun 1948. 11p graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111393

A method for colorimetric determination of nitrates providing both speed and accuracy has been developed using a modified brown ring test procedure. Project no. TB4-301E, Report no. 2. RIAL R 48-726.

Contributions to the thermodynamic functions by a Planck-Einstein oscillator in one degree of freedom, by Herrick L. Johnston, Lydia Savedoff, and Jack Belzer. Ohio State University. Dept. of Chemistry. Cryogenic Laboratory, Columbus, Ohio. Jul 1949. 162p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.50, Photocopy $21.50. PB 114099

1. Oscillators, Harmonic - Thermodynamic properties 2. Tables, Mathematical 3. NAVEXOS P-646.

Coulomb's law and the quantitative interpretation of reaction rates, III, by Edward S. Amis. Arkansas University. Dept. of Chemistry, Fayetteville, Ark Oct 1953. 10p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114290

Technical report no. 5 under Contract Nonr-03700, Project no. NR-037-233.
1. Ions - Exchange processes - Theory 2. Molecular theory 3. Coulomb functions.

Determination of viscosity of exhaust-gas mixtures at elevated temperatures, by J. C. Westmoreland. U. S. National Advisory Committee for Aeronautics. Jun 1954. 41p photo, drawings, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114442

The viscosities of five samples of dry-exhaust-gas mixtures at approximately atmospheric pressure and at temperatures of from 0^{o} to $1,100^{o}$C are presented. A method of analysis and correlation proposed by Sutherland has been applied to the data and equations were derived therefrom for representing the results. NACA TN 3180.

Hydrogen peroxide, by W. C. Schumb, C. N. Satterfield, R. L. Wentworth. Massachusetts Institute of Technology. Dept. of Chemistry and Chemical Engineering. Under Contract no. N5-ori-07819, NR-092-008. Division of Industrial Cooperation project 6552. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part 2. Dec 1953. 240p diagrs, graphs, tables Microfilm $8.00, Photocopy $30.00. PB 112882

1. Hydrogen peroxide - Effects of radiation 2. Hydrogen peroxide - Electrical properties 3. Hydrogen peroxide - Physical properties 4. Hydrogen peroxide - Thermodynamic properties 5. MIT DIC R 43.

Part 4. Nov 1953. 100p diagr, graph, tables Microfilm $4.50, Photocopy $12.75. PB 114632

1. Hydrogen peroxide - Decomposition rate 2. Hydrogen peroxide - Analysis 3. Hydrogen peroxide - Uses 4. Hydrogen peroxide - Stability 5. Hydrogen peroxide - Derivatives 6. MIT DIC R 45.

Effect of acoustical radiations on the hydrogen electrode, by Ernest Yeager and Frank Hovorka. Western Reserve University. Dept. of Chemistry. Ultrasonic and Electrochemistry Research Laboratory, Cleveland, Ohio. Apr 1950. 29p Available from Library of Congress, Publication

Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 113833

Mathematical consideration is given to the production of alternating components in the electrode potential of a hydrogen electrode in an acoustical field. The effect is discussed in terms of a low-frequency region in which the instantaneous conditions are characterized as reversible, and in terms of a higher-frequency region in which relaxation phenomena result because of the lack of instantaneous equilibrium conditions. While the former case involves the use of thermodynamics, the latter requires a kinetic treatment. An attempt is made to relate the reaction constants for the processes at both the reversible and polarized hydrogen electrodes to the phase angle and amplitude of the effect throughout a range of frequencies. The effect at high frequencies may provide an interesting test for theories of rate processes at gaseous electrodes. Contract no. N7onr 47002, Project no. NR 051-162. Technical report no. III.

Evaluation of chemical methods for the determination of atmospheric ozone, by Nalin R. Mukherjee. Alaska. University. Geophysical Institute. Nov 1952. 92p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photocopy $12.75. PB 114355

Scientific report no. 1 under Contract no. AF 19(604)-127.
1. Ozone - Determination - Chemical methods
2. Sodium arsenate - Use in ozone determination
3. Sodium thiosulfate - Use in ozone determination
4. Titer method (Ozone determination).

Intermolecular potentials for some simple nonpolar molecules, by Edward A. Mason and William E. Rice. Wisconsin. University. Naval Research Laboratory. Dept. of Chemistry, Madison, Wis. Nov 1953. 35p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114672

Experimental data on the crystal properties, second virial coefficients, and viscosity coefficients of Ne, A, Kr, Xe, CH_4, N_2, CO, O_2, and CO_2 were analyzed. Contract N7onr-28511. WIS-ONR-6.

Interpretation of the chemical behavior of five- and six-membered ring compounds, by Herbert C. Brown, James H. Brewster, and Harold Shechter. Sep 1953. 29p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114082

It is postulated that exo double bonds stabilize a 5-membered ring and destabilize a 6-membered ring. The generalization is made that reactions will proceed in such a manner as to favor the formation or retention of an exo double bond in a 5-ring and to avoid the formation or retention of an exo double bond in a 6-ring. With few exceptions the generalization accounts for the available data on equilibria involving exo and endo double bond isomers and tautomers, olefin formation in the terpenes and related compounds, the stability of cyclic esters, lactones, hemiacetals and imides, and finally, the preference for furanose and pyranose structures in the sugars and sugar acids. The generalization is shown to be in accord with available thermochemical data. The theoretical implications are examined. The evidence favors the conclusion that an oxygen atom in a ring system can result in the same type of conformational effects as a methylene group. Contract N7onr-394, Task order III, Project NR 055 127.

Isotherms and thermodynamic functions of ethane at temperatures between 0°C and 150°C and pressures up to 200 atm., by A. Michels, W. van Straaten and J. Dawson. Maryland. University. High Pressure Laboratory, College Park, Md. and Amsterdam. Gemeente Universiteit. Van der Waals Laboratorium, Amsterdam, Netherlands. Oct 1953. 15p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114293

Analysis of p-v-t data and evaluation of thermodynamic properties of ethane. Technical report no. 1. From experimental work at the van der Waals Laboratorium, evaluation of the data and calculations of the thermodynamic functions were accomplished at the University of Maryland under Contract Nonr-595(02). To be published in Physica.

Kinetics and energetics of reactions in biological systems. Catholic University of America. Chemistry Dept., Washington, D. C. Final report on Contract N8onr-05300, Jan 1, 1953 to Sep 30, 1953, by Keith J. Laidler. Sep 1953. 7p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114292

Spectrophotometric and kinetic studies on enzymes, enzyme-substrate complexes and analogous systems, high pressure studies on the myosin-ATP system. Solvent effects in the urease system. Theoretical studies on the mechanism of enzyme action.

Mechanism of various organic reactions, by R. B. Scott, Jr. Jan 1954. 10p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114389

Contract N9onr 96100, Nr055-222.
1. Chemical compounds, Organic - Reaction mechanisms 2. Grignard reaction 3. Sulfonyl chlorides - Preparation 4. Sulfonyl chlorides - Reactions.

Proposed approach to the "Chelate effect," by Arthur W. Adamson. University of Southern California. Dept. of Chemistry, Los Angeles, Calif. 1953? 5p table Available from Library of Congress, Publication Board Project, Washing-

ton 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114381

Contract N6238-09 with Office of Naval Research. 1. Chelate compounds - Formation 2. Ions - Exchange processes - Theory 3. Entropy.

Protective finishes (other than organic) for metals. U. S. Arsenal, Rock Island, Ill. Project no. TB4-302D. Order separate parts described below from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C., giving PB number of each part ordered.

Report no. 3: Friction measurement of various phosphate surfaces, by P. G. Chamberlain. Nov 1950. 19p photos, tables $1.00. PB 111394

Friction measurements were made on a Labeco "Stick-Slip" Lubricant Testing Machine on specimen blocks of 1020 steel which has been coated with the coatings in laboratory baths. All blocks were tested at several pressures ranging from 2.5 to 12.5 psi. Calculations were made in the usual manner by dividing the horizontal load by the vertical load. RIAL R 50-1481.

Report no. 4: Study of phosphate coating weight, metal dissolution, and corrosion resistance as related to phosphating solution composition, by L. O. Gilbert. Mar 1951. 18p tables $1.00. PB 111395

The influence of factors such as convection currents, heterogeneity of the work surface, heat treating and cleaning history of the steel, and uniformity and method of surface preparation, affect the phosphating reaction in such a manner as to preclude the use of coating weight - metal dissolved ratios to indicate quality in respect to corrosion resistance. RIAL R 50-2653.

Report no. 5: Radiometric study of phosphating problems, by Stanley L. Eisler and Paul Chamberlain. Nov 1951. 25p tables $1.00. PB 111396

Test panels were phosphated in a bath containing radio-iron and then counted to detect the presence of radio-iron in the coating. Test panels were phosphated in baths containing radio-phosphorus, counted, blasted or chemically stripped and recounted to determine the amount of residual activity which indicated the amount of phosphate ion remaining on the steel. Tests were also conducted to determine efficiency ratings of the phosphating treatments following various methods of coating removal. RIAL R 51-4980.

Report no. 6: Radiometric evaluation of the effectiveness of the chromic acid rinse treatment for phosphated work, by Stanley L. Eisler and Jodie Doss. Jul 1952. 30p photos, tables $1.00. PB 111397

Tests were conducted using twelve solutions of varying chromic acid and chromic-phosphoric (1-1) acid to determine the amount of CrO_3 adsorbed by means of radiometric measurements. Salt Spray tests were conducted to provide supplementary data to the quantitative radiometric measurements. Tests were also conducted to determine the desorption characteristics of the adsorbed chromic acid. RIAL R 52-2542.

Report no. 7: Radiometric evaluation of a new stripping solution for phosphate coatings, by S. L. Eisler. Feb 1953. 30p tables $1.00. PB 111398

Tests were conducted using radiometric techniques to determine the effectiveness of a solution containing sodium hydroxide and sodium cyanide alone and also with a sequestering agent as a stripping solution for phosphate coatings. The effect of the stripping solution on rephosphating efficiencies was similarly determined by a comparison of the counting rates of rephosphated coupons with control coupons phosphated for the first time. RIAL R 52-5158.

Report no. 8: Determination of the solubility of ferric phosphate in phosphating solutions using radioiron, by S. L. Eisler and P. G. Chamberlain. Jun 1953. 25p photo, tables $1.00. PB 111399

Several tests were conducted to determine the solubility of ferric phosphate in various strengths of phosphating solutions both with and without added nitrate as an accelerator. Radioactive iron was used to prepare the precipitates of ferric phosphate which were then allowed to come to equilibrium with the various test solutions. Aliquot portions of the test solutions, after removal of the undissolved ferric phosphate, were dried and counted for comparison with controls containing known amounts of radioiron dissolved in similar solutions. Based on the results of the counting determinations the solubility of ferric phosphate in the various test solutions was calculated. RIAL R 53-638.

Report of the Chemistry Research Board with the Report of the Director of the Chemical Research Laboratory for the year 1953. Gt. Brit. Dept. of Scientific and Industrial Research. Chemistry Research Laboratory, Teddington, England. 1954. 77p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 114660

S. O. code no. 47-103-0-53.
1. Chemical research - Gt. Brit. 2. Laboratories, Chemical - Gt. Brit. 3. Radiochemical research - Gt. Brit.

Studies on boron hydrides. Seventh annual technical report of investigations on water-reactive chemical compounds, period Nov 1, 1952 through Oct 31, 1953, by Anton B. Burg, Carl D. Good, and F. G. A. Stone. University of Southern California. Dept. of Chemistry, Los Angeles, Calif. Nov 1953. 41p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114674

Contract no. N6onr-238-TO-I, Project no. NR 356-050.
1. Borohydrides - Reactions 2. Boron fluoride - Reactions 3. Ethylenimine - Reaction products 4. Ethylaminodiborane - Preparation.

Thermal decomposition of hydrazine on various surfaces, by M. L. Kilpatrick, R. Pertel and H. E. Gunning. Illinois Institute of Technology. Dept. of Chemistry, Chicago, Ill. Nov 1953. 21p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114673

The thermal decomposition of hydrazine has been studied in the temperature range from 300°C. to 500°C. using specially coated reaction tubes. The objective of this exploratory study was to find a suitable coating for eliminating the heterogeneous part of the reaction. Contract N7onr-32912, Project NR 096-162. Studies on hydrazine, Technical report no. 2.

X-ray studies of simple crystals with freezing points below room temperature. I: The crystal structure of isocyanic acid. II: The crystal structure of cyanogen chloride, by Werner C. von Dohlen, Robert B. Helart, Gene B. Carpenter. Brown University. Metcalf Research Laboratory, Providence, R. I. Nov 1953. 14p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114675

Annual report no. 2, summary for period 1 Sep 1952-1 Sep 1953 under Contract Nonr-562(04) NR-017-607. For Annual report no. 1 see PB 108627.
1. Crystals - X-ray inspection 2. Isocyanic acid - Crystal structure 3. Cyanogen chloride - Crystal structure.

ELECTRICAL MACHINERY

Communication Equipment

Frequency coincidence marker, by N. A. C. Lewrey. National Research Council of Canada. Radio and Electrical Engineering Division. Feb 1953. 8p diagrs Available from National Research Council, Ottawa, Canada. $.10. PB 114297

A simple device is described by means of which any number of receivers may be set quickly on a frequency to which a certain receiver is tuned. NRCC ERB 298. NRCC 2937.

Instruction book for voice recording equipment model PD-1, frequency range 200 to 3000 cycles, supply 110-115-120 volts, 60 cycles one phase. Soundscriber Corp., New Haven, Conn. Oct 1942. 132p photos, diagrs (part fold), graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.75, Photocopy $17.75. PB 114324

Contract NXss15306.
1. PD-1 (Voice recorder) 2. Recorders, Sound.

Electronics

Effect of radar wavelength on meteor echo rate, by Von R. Eshleman. Stanford University. Electronics Research Laboratory, Stanford, Calif. Oct 1953. 7p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114503

Contract N6onr-251, Task 7, NR073-360. Revised version of Technical report no. 59. Reprinted from Transactions of the I. R. E., vol. AP-1, no. 2, Oct 1953, p. 37-42.
1. Radar - Echo lines - Effects of wavelength 2. Meteors - Radio detection 3. SU ERL TR 59 Revised.

Generation and transmission of microwave energy. U. S. Army. Jun 1953. 209p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $7.75, Photocopy $26.50. PB 114134

Appendix I. Mathematical construction of profile diagram. - Appendix II. Waveguide mathematics and equivalent circuits of amplifier and quartz crystal. - Appendix III. Characteristic wavelength equation of rectangular cavity resonator.
1. Radio waves 2. Radio waves - Propagation 3. Radio waves - Theory 4. Radio receivers 5. Radio transmission 6. Radar - Signals 7. Resonant cavities 8. Oscillators, Microwave 9. Antennas, Microwave 10. Wave guides 11. WD TM 11-673.

Low frequency propagation studies. Quarterly technical report no. 3 for the period Dec 15, 1953-Mar 15, 1954 under Contract AF 19(604)-795, by Robert A. Helliwell. Stanford University. Radio Propagation Laboratory, Stanford, Calif. Mar 1954. 22p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114485

1. Radio waves - Propagation - Ionosphere 2. Analyzers, Atmospheric 3. Whistlers (Radio signals) 4. Winds, Ionospheric - Measurement.

9 by 9 inch transonic-supersonic wind tunnel, by G. F. Anderson and P. F. Maeder. Brown University. Division of Engineering, Providence, R. I. Jan 1950. 52p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114464

Contract N7onr-35805. Technical report WT-2.
1. Wind tunnels, Supersonic - Design.

Nonlinear optimization of relay servomechanisms, by Lawrence M. Silva. California. University. Division of Electrical Engineering. Electronics Research Laboratory, Berkeley, Calif. Apr 1954. 116p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.00, Photocopy $15.25. PB 114444

A new technique for the design of servomechanisms with optimum transient response has been developed. The fundamental concept in the new method is that the control or forcing of the output member must be performed in such a manner that the error and its derivatives shall be reduced to zero in three steps for third or higher order systems. The superior transient performance of a predictor servo is demonstrated by an experimental investigation of a system with a third order output member. UC IER ser 60, Issue no. 106.

Obstacles and discontinuities in a multi-mode waveguide, by Gedaliah Held and Wolfgang Kummer. California. University. Div. of Electrical Engineering. Electronics Research Laboratory. Antenna Group, Berkeley, Calif. Aug 1953. 19p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114267

General considerations are developed concerning equivalent circuit representations of obstacles and discontinuities of a general type in waveguides which support free propagation of several modes. Special application is made to the case of a half-wave rectangular slot in the wall of a rectangular waveguide propagating the TE_{10} and TE_{20} modes. Report no. 20 on Contract N7onr-29529. UC IER ser. 60, Issue no. 101.

On diffraction by an infinite grating, by Fritz Reiche. New York University. Institute of Mathematical Sciences. Division of Electromagnetic Research. Dec 1953. 16p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114114

The diffraction of a plane wave by an infinite grating of identical circular cylinders is considered. It is shown that the various scattered cylindrical waves combine to form a finite number of plane waves and an infinite number of "surface waves" propagated along the grating. Contract no. AF 19(122)-42.

Passive ortung durch geräuschpeilung (Passive ranging by sonic (acoustic) soundings), by Dr. F[illegible]ze. Translated and edited by F. A. Raven. May 1954. 16p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114350

Paper delivered to the Supersonic Conference, 19 Oct 1953, Bremen, Germany. Illustrations mentioned in text are not included.
1. Sound, Underwater - Detection - Germany
2. Sound, Underwater - Listening tests - Germany
3. Hydrophones, Rochelle salt - Germany 4. Ranging systems, Sound - Germany 5. NAVSHIPS T 557 6. STS 190.

Progress report no. 29 under Contract N5ori-76, Task orders 1 and 28, Project NR-078-011, covering period Jul 1, 1953-Oct 1, 1953, by H. R. Mimno. Harvard University. Cruft Laboratory. Oct 1953. 60p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114379

1. Radiation, Electromagnetic 2. Optics, Microwave 3. Waves, Electromagnetic - Propagation 4. Electron physics 5. Noise - Statistical analysis 6. Random functions 7. Antennas - Research.

Progress report of the Ad Hoc Group on Reliability of Electronic Equipment. U. S. Research and Development Board. Feb 1952. 20p diagr Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111455

EL 200/17, vol. I. Vol. II is Confidential. Albert F. Murray, Chairman.
1. Electronic equipment - Performance 2. Electronic equipment - Failure 3. Tubes, Electron - Performance.

Quarterly progress report, by J. B. Wiesner, G. G. Harvey, H. J. Zimmermann. Massachusetts Institute of Technology. Research Laboratory of Electronics. Oct 1953. 71p drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photocopy $10.25. PB 114499

Contract DA 36-039-sc-100. Dept. of the Army project no. 3-99-10-022. Signal Corps project 8-102 B-O.
1. Electronics - Research 2. Electrons - Emission 3. Helium, Liquid - Viscosity 4. Spectroscopy, Molecular 5. Communication - Theory 6. Computers, Analog 7. SIG Contract DA 36-039-sc-100.

Radar range tracking and noise, by J. P. Ruina. Brown University. Division of Engineering, Providence, R. I. Sep 1953. 37p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114123

Three approaches to the problem are presented. The first (Section II) uses the mean square error criterion to obtain an optimum system. The second (Section III) takes into account the finite range aperture of the system and an optimum system is obtained using a criterion of performance which is more significant for range tracking than the mean square error criterion. In Section IV, a solution is presented for the probability of losing the target in the course of a track. Technical report no. 2 under Contract Nonr-562(05).

Research in physical electronics. Illinois. Engineering Experiment Station. Electrical Engineering Research Laboratory. Electron Tube Research Section, Urbana, Ill. Quarterly progress report no. 5 under Contract no. AF 19(604)-524 for the period 15 Sep to 15 Dec 1953. Jan 1954. 96p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photocopy $12.75. PB 114240

For 3d-4th reports see PB 112885 and PB 113471. Contents: Part I: Introduction. - Part II: High speed oscillography and micro-time analysis, by H. M. Von Foerster. - 1. Time dispersion of secondary electrons, by E. W. Ernst. - 2. Space charge effects in ultrahigh-frequency modulated electron beams (Klystron tubes), by M. Weinstein. - 3. High level pulser, by K. R. Brunn. - 4. Transmission-line tubes, by V. J. Fowler. - Part III: Gaseous electronics, by L. Goldstein. - 1. Electro-magnetic wave propagation in anisotropic media. - 1.1. Interaction of electro-magnetic waves, cross modulation and associate effects, by J. M. Anderson. - 1.2. Anisotropy produced by magnetic fields, by J. E. Etter. - 1.3. Magneto-electron resonance phenomena, by M. Gilden. - 2. Fundamental processes in gaseous discharges using microwave techniques, by C. L. Coates.
1. Electronics - Research 2. Electron beams - Electromagnetic effects 3. Electrons - Emission, Secondary - Theory 4. Oscillography, High speed 5. Waves, Electromagnetic - Propagation 6. Plasma, Electron - Oscillations - Measuring equipment - Design 7. Resonance - Mathematical analysis 8. Gases - Diffusion - Theory.

Resonance phenomena in time-varying circuits, by Mariano Campanero Herrero. Stanford University. Electronics Research Laboratory, Stanford, Calif. Oct 1953. 113p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.00, Photocopy $15.25. PB 114486

This dissertation comprises a study of the sweeping-filter problem and its applications to a panoramic receiver. The conditions for a quasi-steady state to hold are determined. A comparison is made between the sweeping filter case and the so-called "gliding-tone problem" in panoramic receivers of the sweeping-local-oscillator type. Several experimental results in the backward-wave amplifier used as a sweeping filter at frequencies of 2000 Mc/s are included. A table is included that indicates the analogies and differences. Various types of parametric excitation are compared and physical interpretation of the behavior is presented, as well as the differences in the mathematical behavior of the system differential equations. Contract N6onr-251, Task 7, NR 073-360. Appendix A: Considerations of Zadeh's method. - Appendix B: Summary of formulas for use in the calculations. SU ERL TR 69.

Statistical theory of coincidence experiments, by Z. Bay, H. Kanner, V. P. Henri. George Washington University. Electronics Research Project, Washington, D. C. Sep 1953. 37p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114121

The consistent use of a general statistical theory makes possible the elimination of ambiguities from the interpretation of coincidence experiments. It is shown that measurements of time delays and disintegration rates can be accomplished to any desired accuracy by use of experimental coincidence curves alone. For the treatment of the time-resolving properties of coincidence equipment, two characteristic time magnitudes are needed, one of which is a straight-forward generalization of the old definition of the resolving time. The two time magnitudes allow the approximate determination of random time lags. The general theory also provides a strict definition of the coincidence efficiency. Contract Nonr 168(00).

Study of performance measures of trouble shooting ability on electronic equipment, by Rupert N. Evans and Lyman J. Smith. Illinois. University. College of Education, Urbana, Ill. Oct 1953. 145p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.00, Photocopy $19.00. PB 114435

The procedure used in constructing and administering a performance test for trouble shooting the SG-1b radar, the test itself, and data based on the administration of the test are reported. Contract no. N6-ori-07142, Project NR 153-124.

Theory of radio reflections from electron-ion clouds, by Von R. Eshleman. Stanford University. Electronics Research Laboratory, Stanford, Calif. Dec 1953. 36p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114639

Approximations to the reflection coefficients of electron-ion clouds of various sizes, shapes, and densities are determined. A simplified approach to the problem is employed, wherein the total reflection from the low-density clouds is computed by summing the scattered wavelets from the individual electrons, while the high-density clouds are treated as total reflectors at the critical density radius. Some of the limitations of this method are discussed. Several possible applications of the theoretical results are outlined. Contract N6onr-251, Task 7 (NR 073-360). SU ERL TR 72.

Ultrasonic propagation in solid materials. Interim research report no. 2 under Contract no. AF 19-(604)-835, from Oct 1, 1953 to Dec 31, 1953, by Sven J. Johnson. Andersen Laboratories, Inc., West Hartford, Conn. Dec 1953. 23p photos, drawings, diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114111

This interim report outlines the general problem of

study, describes the method and equipment, and includes a number of photographs of ultrasonic beams of 20 mc/sec. and higher compressional and shear waves in fused quartz. Brief sections are devoted to aspects of bonding, the elimination of side lobe energy and causes of spurious signals in delay lines.

Generators, Motors, Transmission

Development of subminiature high-temperature capacitors. Interim engineering report no. 4 for the period 28 Oct 1953 to 28 Jan 1954, under Contract no. AF 33(038)-17190, Supplemental agreement no. 3, by H. Mack Thaxton. Balco Research Laboratories, Inc., Newark, N. J. Mar 1954. 25p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114312

This report presents progress results on capacitor development and fabrication during the reporting period 28 October 1953 to 28 January 1954. Research samples rated 0.018 watt-seconds (0.1 mfd - 600 wvdc) have been completely tested for high-temperature operation. Tests of all electrical characteristics before and after load-life testing have given excellent results. Tests were conducted on metallized capacitors, improved dielectric film, and quartz seals. For 1st-2d reports see PB 112003, PB 112838.

High power-high voltage pulse transformer. Design criteria and data. Final report. General Electric Co. Transformer and Allied Products Division, Pittsfield, Mass. Under Contract no. DA36-039-sc-117, by P. Fenoglio, C. W. Peck, F. R. Richardson, H. W. Lord, A. Boyajian. Dept. of the Army project no. 3-26-00-600. Signal Corps project no. 32-2006-31. G. E. requisition no. NWR-60F200. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part I, covering the period Jun 1, 1950 through Nov 30, 1952. Feb 1953. 263p photos, drawings, diagrs, graphs, tables Microfilm $9.25, Photocopy $34.00. PB 114591

This part of the report includes the information necessary to acquaint an inexperienced person with the principles of pulse transformer design and the necessary data. Equivalent circuits, windings, core, insulation, and cooling are discussed separately. A procedure is outlined which permits one to design a pulse transformer in a systematic manner.

Part II, covering the period Jun 1, 1950 through Nov 30, 1952. Feb 1953. 205p diagrs, graphs, tables Microfilm $7.75, Photocopy $26.50. PB 114592

This part of the report covers the derivation of certain equations and description of certain tests and investigations performed to obtain data and information for the preparation of PART I.

Servo-controlled helix antenna for telemetering, by K. A. Morgan. U. S. Naval Research Laboratory. Apr 1954. 32p photos, drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114184

Design and test information is given for a 4-1/2-turn helical beam antenna and its servo control and rotating mechanism. The antenna is designed to work in the 216 to 222 Mc band for purposes of receiving FM/FM telemeter signals. The antenna is adjustable in elevation and is servo controlled in train with a maximum rate of turn of 38 degrees per second. NRL R 4326.

Some measurements on non-linear dielectrics, by M. D. K. Minkiewicz and H. LeCaine. National Research Council of Canada. Radio and Electrical Engineering Division. 1954. 11p photos, diagrs, graphs, tables Available from National Research Council of Canada, Ottawa, Canada. $.25. PB 114202

The non-linear dielectric material employed in a number of small-size ceramic capacitors was investigated, particularly with regard to its usefulness at high frequencies. NRCC ERB 307. NRCC 3152.

Miscellaneous

Coaxial line filled with two non-concentric dielectrics, by D. J. Angelakos. California. University. Div. of Electrical Engineering. Electronics Research Laboratory, Berkeley, Calif. Nov 1953. 17p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114633

An analysis has been made of a coaxial transmission line composed of two coaxial cylindrical conductors. Two dielectrics fill different angular portions of the volume between the conductors. The propagation constants (primarily the guide wavelength) are determined by a resonant condition applied to the plane transverse to the direction of propagation. Experimental verification is given for near unity values of the ratio of the outer to the inner radius. In addition, an experimental investigation has been made of the properties of the guide wavelength as a function of frequency and larger ratios of the radii. Report no. 21 on Contract N7onr-29529. UC IER ser. 60, Issue no. 102.

Design and performance of a high-power pulsed klystron, by Marvin Chodorow, E. L. Ginzton, I. R. Neilsen, and Simon Sonkin. Stanford University. Microwave Laboratory, Stanford, Calif. Sep 1953. 20p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114452

M. L. Report 212. Contract N6onr-25123, NR-073-361.
1. Vacuum tubes, Klystron - Design 2. Vacuum tubes, Klystron - Performance.

Distributed pair, by Donald O. Pederson. Stanford University. Electronics Research Laboratory, Stanford, Calif. Oct 1953. 27p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114487

Contract N6onr-251, Task 7, NR 073-360.
1. Amplifiers, Distributed - Design 2. SU ERL TR 70.

Electrolytic analogue transistor, by H. Letaw, Jr. Illinois. Engineering Experiment Station. Electrical Engineering Research Laboratory, Urbana, Ill. Jun 1953. 26p drawing, diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114256

Technical report no. 1 under Contract N6-ori-71, Task 40, Project no. NR 072 161.
1. Transistors, Analog - Electrical properties 2. Electrolytic cells - Design 3. Electrolytic cells - Chemical reactions.

Elimination of radio interference by shielding and design of shielded rooms, by Donald L. Benedict. Stanford Research Institute, Stanford, Calif. Aug 1952. 30p photos, diagrs, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114646

This report reviews work on the use of solid sheet iron as a shielding material for attenuations of 120 db or greater over the frequency range of 15 Kcps to 10,000 Mcps. Associated facility requirements including power line filters, ventilation and illumination are discussed. A 100-db power line filter was designed and constructed. Testing procedures are described. Contract no. NOy-22272. SRI Proj 336, Final report.

Magnetic amplifiers. Carnegie Institute of Technology. Dept. of Electrical Engineering, Pittsburgh, Pa. Under Contract N6ori-47, Task order V. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part I: Steady state performance of magnetic amplifiers without feedback, by D. W. Ver Planck and Max Fishman. Feb 1947. 83p diagrs, graphs (1 fold), tables Microfilm $4.00, Photocopy $11.50. PB 114429

This report deals with the investigation of saturable core reactors.

Part II: Steady state performance of magnetic amplifiers with feedback, by D. W. Ver Planck and Max Fishman. Aug 1947. 88p diagrs, graphs (part fold), table Microfilm $4.00, Photocopy $11.50. PB 114430

This report deals with the investigation of magnetic amplifiers made by the Electrical Engineering Department, Carnegie Institute of Technology under contract N6ori-47 Task Order V. Since the superiority of magnetic amplifiers using two separate cores has been established for the case without feedback in MAGNETIC AMPLIFIERS - PART I, this report deals only with that class of amplifiers with two separate cores.

Part III: Step-by-step calculation of a magnetic amplifier, by D. C. Beaumariage. Apr 1948. 33p diagr, graphs (2 fold), tables Microfilm $2.50, Photocopy $5.25. PB 114431

1. Amplifiers, Magnetic - Mathematical analysis 2. Amplifiers, Magnetic - Circuits 3. Electromagnetic instruments and apparatus 4. Equations, Electromagnetic.

Part IV: Steady state performance of magnetic amplifiers with self feedback, by Max Fishman and Donald C. Beaumariage. Aug 1948. 45p diagrs, graphs (1 fold), tables Microfilm $2.75, Photocopy $6.50. PB 114432

A study is carried through for the non-linear electromagnetic system, and a comparison of this system using self feedback is presented. Great care has been taken in checking and remeasuring the normal magnetization curve which is shown in Figure 5. The calculated results of this report agree quite well with the experimental curves. The use of this more accurate normal magnetization curve also reduces greatly some of the experimental discrepancies mentioned in the previous reports; this is shown separately in Appendix I.

Part V: Analytical predetermination of the steady state characteristics of magnetic amplifiers, by L. A. Finzi and D. C. Beaumariage. Dec 1948. 54p diagrs, graphs (1 fold), tables Microfilm $3.00, Photocopy $7.75. PB 114433

Analytical relations among the direct control current, alternating output current, and alternating voltage drop across the magnetic amplifier are found, utilizing harmonic analysis, in practical form for magnetic amplifier circuits using toroidal cores without feedback, with external feedback, and with self feedback.

Part VI: An analysis of transients in magnetic amplifiers without feedback, by D. W. Ver Planck, L. A. Finzi, D. C. Beaumariage. Jul 1950. 9p diagrs, graphs Microfilm $1.50, Photocopy $1.50. PB 114434

Preprinted from Transactions of the American Institute of Electrical Engineers, vol. 69, 1950. Work done partly under Contract N6ori-47, Task order V, and completed after its expiration.
1. Amplifiers, Magnetic - Mathematical analysis 2. Amplifiers, Magnetic - Circuits 3. Transient electrical phenomena.

Methods of measuring dissipative four-poles based on a modified Wheeler network, by H. M.

Altschuler. Polytechnic Institute of Brooklyn. Microwave Research Institute, Brooklyn, N. Y. Jan 1954. 29p diagrs, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114306

Two methods of abstracting the parameters of dissipative four-poles from measured data are presented here. One of these is a semi-precision method applicable to symmetric four-poles which results directly in a conveniently symmetric network representation. The other is a precision method applicable to arbitrary dissipative four-poles. Both these methods are based on the Modified Wheeler representation, a new and completely general network, which is introduced in this report. In addition to the derivation of the network and of the two analyses, the relationship that the network bears to its dual, to the impedance Tee and to the admittance P_i is presented. Contract AF 19(604)-890. PIB R 363-54. PIB 297.

Microwave noise study. Quarterly report no. 4, Nov 1, 1953-Feb 1, 1954, under Contract AF 19(604)-636, by Winston M. Gottschalk and David Middleton. Raytheon Manufacturing Co. Research Div., Waltham, Mass. Feb 1954. 53p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114993

For Report no. 2 see PB 112376.
1. Noise - Detection 2. Noise - Mathematical analysis 3. Spectra, Noise - Analysis 4. Vacuum tubes, Magnetron - Noise.

Neon lamps as bootstrap sweep circuit elements, by Robert E. Miller and William R. Kincheloe, Jr. Stanford University. Electronic Research Laboratory, Stanford, Calif. Jun 1952. 17p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 113496s

A bootstrap sweep circuit provides the desirable properties of low output impedance, positive-slope sweep, and excellent sweep linearity. The parameters important to its operation are indicated by analysis of an ideal bootstrap sweep circuit. A free-running sweep circuit (20 - 30 cps with 5 - 10 us retrace time) using this principle is described, along with a circuit containing provision for decreasing or increasing the sweep speed during the sweep interval. Waveforms are shown to indicate the type of operation which can be expected. Contract N6-onr-25132, NR-378-362. Supplement to Technical report 10 (PB 113496). SU ERL TR 10 supplement.

Plasma oscillations in a static magnetic field, by Donald Nelson. Oregon State College, Corvallis, Ore. 1954. 153p photos, drawing, diagrs, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.25, Photocopy $20.25. PB 114629

Final report under Contract W 19-122-ac-34. (Generation of millimeter electromagnetic waves).

1. Waves, Electromagnetic - Generation 2. Kinetic theory 3. Plasma, Electron - Oscillations 4. Plasma, Electron - Oscillations - Measuring equipment - Design 5. Plasma, Electron - Oscillations - Theory.

Pulsed operation of a high-power amplifier with complex load impedance, by W. J. Cunningham and J. G. Skalnik. Yale University. Dunham Laboratory, New Haven, Conn. Oct 1953. 65p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.25, Photocopy $9.00. PB 114501

Report gives a description of tests made using the amplifier from a Type XQHB sonar system. Experimental measurements were made on the amplifier and compared with characteristics of the operation predicted from the theoretical analysis. Contract Nonr-433(00), Report no. 4.

Radio interference suppressors. Progress report no. 12 under Contract no. AF 33(038)-9353 for the period 24 Oct 1953 to 24 Jan 1954. Sprague Electric Co., North Adams, Mass. Jan 1954. 22p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114439

1. Radio interference - Elimination 2. Teflon - High frequency resistance 3. Capacitors, Metallized paper - Life tests 4. Cores, Magnetic - Materials - Tests 5. Filters, Radio frequency - Thermal properties.

Research services and investigations on subminiature multielement diodes and bistable elements for microtronic circuits. Quarterly progress report no. 2, second series, under Contract no. AF 19(604)-55, for period Jan 24 to Apr 23, 1954, by E. B. Dale, M. Genser, M. W. Aarons, M. Pobereskin, J. E. Gates, T. C. Harman, and C. S. Peet. Battelle Memorial Institute, Columbus, O. May 1954. 46p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114627

1. Vacuum tubes, Diode - Miniaturization 2. Circuits, Microtronic - Elements 3. Silicon - Purification 4. Germanium - Electrical properties 5. Gold - Electrodeposition.

Solution for the path of radio waves through the solar atmosphere by elliptic integrals, by Takeo Hatanaka. Cornell University. School of Electrical Engineering, Ithaca, N. Y. Jan 1954. 29p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114453

Contract no. AF 19(604)-73. Scientific report no. 3. Research report EE 181.

1. Radio waves - Propagation - Theory 2. Radio waves - Propagation - Sunspot effects 3. Atmosphere, Solar - Radio waves 4. Equations, Electromagnetic.

Study of a beam deflection tube approach toward obtaining non-linear characteristics. Raytheon Manufacturing Co., Waltham, Mass. Final report II under Contract no. AF 19(122)-17, period Jul 27, 1950 to Apr 26, 1954, by Robert McCowan Unger. Apr 1954. 103p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photocopy $14.00. PB 114490

This period has been concerned with investigation of rectilinear beams. Analysis of comparative values of the two is discussed on a theoretical as well as an experimental basis. This latter approach resulted in production of a logarithmic output tube to be described in detail. Also given is the mathematical analysis necessary for design of a non-linear output tube utilizing a finite width beam. Raytheon S. O. no. 31-072-000.

Surface waves on a two-layer dielectric-coated wire, by R. A. Hurd. National Research Council of Canada. Radio and Electrical Engineering Division. Oct 1953. 6p diagr Available from National Research Council of Canada, Ottawa, Canada. $.10. PB 114203

A two-layer dielectric-coated surface-wave transmission line can be considered to be a single-layer line of the same total thickness of dielectric with a suitably modified dielectric constant. Design equations for the two-layer line have been derived. NRCC ERB-325. NRCC 3187.

Survey of tuned circuits for the 300 to 3000 Mc frequency range, by F. C. Isely. U. S. Naval Research Laboratory. Sep 1946. 36p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114276

A survey of possible circuits for use in the 300 to 3000 Mc frequency range is given. Advantages and disadvantages of these circuits, which are either well known or recently developed at this Laboratory, are compared, in order to have a starting point for an intensive research program on the development of circuits to be used in Naval Communication Receivers. Abstracts dealing with the mathematical and technical considerations of the circuits are included. NRL R 2984.

Techniques of design of radio frequency choke coils. Final report under Contract no. DA36-039-sc-5500, Mar 15, 1951 to Sep 15, 1952, by Bernard Goldsmith, James Montllor, Charles V. Longo. Essex Electronics, Berkeley Heights, N. J. Sep 1952. 265p drawings, diagrs, graphs (part fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $9.25, Photocopy $33.75. PB 114330

A theoretical analysis of the electrical behavior of these circuit elements is discussed. The principle applications are also discussed and the significant electrical parameters are deduced and evaluated. Samples of a four-terminal decoupling network and a series of choke coil windings are provided with the report. The investigations leading to the development of these specimens are described. Appendix A: Correction to transmission bridge data (supplement to section IV. C. of Fifth quarterly report.) - Appendix B: Transmission bridge circuit at high frequency. - Appendix C: Stock choke data. - Appendix D: Description and data: Pi-filter samples. - Appendix E: Data and curves: Experimental choke windings. - Appendix F: Description and data: Choke coil samples.

Wide-band square-law circuit element, by A. S. Soltes. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Electronics Research Directorate. RF Components Laboratory, Cambridge, Mass. Jan 1954. 23p photo, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114428

A square-law circuit element with operating frequency range from zero into the VHF region is described. Its dynamic range and accuracy capabilities vary with the particular conditions under which it is operated; accuracies within less than one percent of full scale and output dynamic ranges of over 100 db have been achieved. Frequency response limitations and possible sources of error are analyzed. Experimentally determined characteristics are presented and noise properties, dynamic range, and accuracy potentialities evaluated. AAF CRC TR 54-2. AAF CRL E 5110.

X-ray spectroscopy and the small angle scattering of X-rays. Final report Jun 15, 1948-Aug 31, 1953, under Contract N7onr-28503 (NR017-605), by W. W. Beeman. Wisconsin. University. Dept. of Physics, Madison, Wis. Oct 1953. 12p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114333

A summarization of research conducted over five years at the University of Wisconsin, with bibliography. Points to the need for more research in solid state spectroscopy.

FOOD AND KINDRED PRODUCTS

Peanut brittle rancidity. U. S. Bureau of Agricultural and Industrial Chemistry. Southern Regional Research Laboratory, New Orleans, La. Jan 1954. 5p Available from U. S. Dept. of Agriculture, Southern Regional Research Laboratory, New Orleans, La. PB 114582

Prepared in cooperation with National Confectioners'

Association. Candy research summary no. 2.
1. Candy - Research 2. Peanut brittle - Rancidity 3. AIC 368.

Research on food preservation in the United Kingdom. Gt. Brit. Dept. of Scientific and Industrial Research. Food Investigation Organization. Jan 1954. 59p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 114349

Short articles published in "Food Science Abstracts." S. O. code no. 47-178.
1. Laboratories, Food preservation - Directories - Gt. Brit. 2. Food - Preservation - Research - Gt. Brit.

FUELS AND LUBRICANTS

Climatic criteria defining efficiency limits for certain industrial activities. Section 7b: Coke chemicals, by Alfred W. Booth and Leslie Martin. Illinois. University. Dept. of Geography. n.d. 15p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 113901

Contract no. AF 19(604)-416.
1. Coke - Manufacture 2. Industries - Location - Effect of climate.

Infrared spectra of 47 dicyclic hydrocarbons, by John H. Lamneck, Jr., Harold F. Hipsher and Virginia O. Fenn. U. S. National Advisory Committee for Aeronautics. Jun 1954. 34p graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114540

The infrared spectra are presented for 47 dicyclic hydrocarbons consisting of some alkyldiphenylmethanes, alkyldicyclohexylmethanes, alkylnaphthalenes, alkyltetralins, 1,3-diphenyl-2-alkylpropanes and 1,3-dicyclohexyl-2-alkylpropanes. The physical properties of these highly purified compounds are included for reference purposes. NACA TN 3154.

Roumanian petroleum. Articles translated and edited by F. A. Raven. Jun 1954. 43p photos, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114458

Contents: A. Zusammensetzung und eigenschaften der rumänischen erdöle (Composition and properties of Roumanian petroleums), by Dr. E. Casimir. (Abstract from Moniteur du Petrole Roumain, no. 5, 1 Aug 1938, in Petroleum, vol. 34, no. 37, p. 1-3). - B. Studien über rumanische rohöle (Studies on Roumanian crude oils (Petroleums)), by Hans Hlauschek (Erdöl and Kohle, vol. 3, no. 7, Jul 1950, p. 315-317). C. Onderzoek naar de chemiesche samenstelling von verschillende aardolien, I. (Investigation of the chemical composition of various petroleums, I), by A. Dias Santilhano, C. van Vlodrop, H. L. Waterman and J. van Wijk. (Chemisch weekblad, vol. 38, 1941, p. 106-113). - D. Characteristik des rumänischen erdöls (Characteristics of Roumanian petroleum), by L. Basgan (Oel und Koehle, no. 40, 22 Oct 1940, p. 393-394).
1. Petroleum - Roumania 2. NAVSHIPS T 560 3. STS 194.

Selected industrial films: Mining, a list and description of films available to business from industrial, commercial, and government sources. U. S. Office of Technical Services. Jun 1954. 14p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111366

1. Motion pictures, Educational 2. Mines and mining - Motion pictures 3. Coal mines and mining - Motion pictures 4. OTS SIF 9.

Zur dicke der grenzschichten von ölen an metallischen oberflächen (On the thickness of the boundary layers of oils on metallic surfaces), by S. von Schlessl. Translated and edited by F. A. Raven. May 1954. 24p photos, drawings, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114352

Translated from Kolloid-Zeitschrift, vol. 129, no. 2/3, p. 84-91, 1952. Presented at the Rheology Convention in Berlin, Sep 1952. Research done at the Institute for Electro- and Physical Chemistry of the Dresden Technical Institute.
1. Lubricants - Viscosity - Measurement - Germany 2. Lubricants - Viscosity - Measuring equipment - Germany 3. Friction, Boundary - Germany 4. NAVSHIPS T 559 5. STS 192.

HIGHWAYS AND BRIDGES

Aerodynamic stability of suspension bridges with special reference to the Takoma Narrows bridge. Part IV: Model investigations which influenced the design of the new Takoma Narrows bridge, by F. B. Farquharson. Washington. University. Structural Research Laboratory. Apr 1954. 104p photos, drawings (1 fold), diagrs, graphs, tables Available from University of Washington, Engineering Experiment Station, Seattle, Washington. PB 114360

For Part II see PB 102408. Report of an investigation conducted by the Structural Research Laboratory, University of Washington, under the direction of the Washington Toll Bridge Authority in cooperation with the Bureau of Public Roads, Dept. of Commerce.
1. Bridges, Suspension - Stability 2. Bridges, Suspension - Models 3. WEES B 116, Part IV.

Concrete resurfacing of concrete pavement in various stages of deterioration. Presented at the

thirty-third annual meeting, January 12-15, 1954, by D. E. Gotham and George W. Lord. Highway Research Board. 1954. 43p photo, graphs, tables Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. $.60. PB 114483

National Research Council. Publication 313.
1. Pavements, Concrete - Maintenance and repair 2. Pavements, Concrete - Resurfacing 3. HRB BUL 87 4. NRC 313.

Dynamic stresses in cast iron girder bridges, by G. R. Mitchell. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1954. 68p photos, diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. $.75. PB 114403

S. O. code no. 47-551-19.
1. Bridges, Iron and steel - Stress analysis - Gt. Brit. 2. Bridges, Iron and steel - Tests - Gt. Brit. 3. Girders, Iron - Tests - Gt. Brit. 4. Strain measurements - Methods - Gt. Brit. 5. DSIR NB TP 19.

Highway finance, selected references, 1950-1953, compiled by Ina M. Hamlin. Highway Research Board. 1954. 70p Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. $.75. PB 114624

1. Roads - Finance - Bibliography 2. HRB B 16 3. NRC 315.

Report of the Road Research Board, with the report of the Director of Road Research for the year 1953. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Board. 1954. 112p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. $1.25. PB 114661

S. O. code no. 47-98-0-53.
1. Roads - Research - Gt. Brit.

Study of single-sized gravel aggregates for road-making, by F. A. Shergold. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England. Feb 1954. 23p maps, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 114402

S. O. code no. 47-110-30.
1. Aggregates, Gravel - Gt. Brit. 2. Road materials - Tests - Gt. Brit. 3. Gravel - Production - Gt. Brit. 4. Gravel - Analysis - Gt. Brit. 5. DSIR RR TP 30.

Use of stabilized soil for road construction in the U.S.A., by K. E. Clare. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England. 1954. 48p diagrs, map, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 114401

S. O. code no. 47-110-29.
1. Soil stabilization - Gt. Brit. 2. Soil mechanics - Gt. Brit. 3. Soil conditioning - Research - Gt. Brit. 4. Road materials - Binding agents - Gt. Brit. 5. Roads - Surface treatment - Bituminous materials - Gt. Brit. 6. DSIR RR TP 29.

INSTRUMENTS

Apparatus for acoustical measurements with pulse-modulated ultrasonic waves, by Frank Hovorka, Ernest Yeager, John Bugosh, Hyman Chessin, D. Staicopoulos. Western Reserve University. Dept. of Chemistry. Ultrasonic and Electrochemistry Research Laboratory, Cleveland, Ohio. Oct 1949. 51p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 113832

A thousand-watt, pulse-modulated, ultrasonic generator has been constructed for acoustical measurements in the range of from 200 to 1200 kc at pulse repetition rates from 20 to 2500 per sec with pulse durations from 50 mu sec through one-half the repetition period. The transducer mounting which is used with this generator permits propagation directly into water. Investigations of electrochemical effects are carried on in an acoustical cell placed so that acoustical waves enter and leave the cell through rho-c rubber windows. Details are provided for a special hydrophone that has been constructed. Advantages associated with this equipment are well-defined rectangular pulses of ultrasonic energy over a wide range of pulse repetition rates and durations, relatively large acoustical output, stability with respect to acoustical output, suitability for quantitative measurements, and unusual versatility. Contract no. N7onr 47002, Project NR 051-162. Technical report no. II.

Beta scan indicator for radar sets AN/FPN-16 and AN/CPN-4, by David Sheftel. U. S. Air Force. Air Research and Development Command. Rome Air Development Center, Griffiss Air Force Base, Rome, N. Y. Apr 1954. 23p photos, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114285

The Beta Scan Indicator described herein was developed by RADC for use with ground-controlled-approach radar systems. It replaces the presently used EPI which introduces several limitations to the overall efficiency of the existing equipment. Significant features are illustrated and discussed. Techniques in design practices utilized in this development are a result of continuous study for maximum safety and efficiency in guiding aircraft during limited visibility conditions. Among the many benefits derived from this indicator are increased sensitivity with regard to position readibility, increased

signal display, reduced sub-assembly and component compliment, simplification of alignment and power saving. AAF RADC TR 54-5.

Calculation of products of detonation using IBM machines, by A. S. Filler. Utah. University. Institute for the Study of Rate Processes. Explosives Research Group, Salt Lake City, Utah. Oct 1953. 101p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photocopy $14.00. PB 114384

A method is described for calculating the equilibrium concentrations of the chemical products of detonation. A detailed description is given of the use of the IBM 602A Calculating Punch for making these calculations. The method is also suitable for use with desk calculators. A survey was made of various possible gaseous products of detonation of C, H, N, and O explosives. Several were found which had not been considered previously but which may be present in appreciable quantities under detonation conditions, especially at very high fugacities. Tables of equilibrium constants, ideal heat capacities, and heats of formation are given for all the compounds considered. Technical report no. XXI. Contract no. N7-onr-45107, Project no. 357-239.

Calibration of the Lilly-Anderson-Hervey nitrogen meter; with special reference to the influence of water vapor and CO_2, by Nils P. V. Lundgren, Clayton S. White, and Walter M. Boothby. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Mar 1954. 18p diagr, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114235

The Ekeroot modification of the Lilly-Anderson-Hervey nitrogen meter was calibrated using gas mixtures of N_2, O_2, CO_2, and H_2O. The meter showed no specific response to steam or pure oxygen at operating pressures of the discharge tube ranging from 40 to 2,900 microns. A specific response to near 100 percent CO_2 and 36 percent CO_2 (in oxygen) was recorded at discharge tube pressures between 50 and 500 microns, with the maximum occurring at 100 microns. AAF SAM Proj 21-1201-0007, Report no. 3.

Computer components fellowship no. 347. Quarterly report no. 1, second series, Oct 1, 1953 to Dec 31, 1953. Mellon Institute of Industrial Research, Pittsburgh, Pa. Jan 1954. 135p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.75, Photocopy $17.75. PB 114377

Contract no. CLNAF 19/604/-943. For reports 1-7, 10-12 see PB 109935-109940, 108646, 110761, 110930, 112801. Contents: I. Bistable optical elements, by A. Milch. - II. R.-F.-triggered bistable gas diode, by F. A. Schwertz and R. T. Steinback. - III. Saturable transformers as gates, by Burnham Moffat. - IV. Printed circuitry via xerography, by Martin M. Haller. - V. A. C. behavior of nonlinear semiconductor resistors, by J. J. Mazenko and F. A. Schwertz.
1. Computers, Digital - Components 2. Computers, Digital - Design 3. Computers, Digital - Optical elements 4. Data storage systems 5. Circuits, Electronic - Printed 6. Gates, Magnetic - Materials 7. Transformers, Saturable 8. Resistors, Nonlinear - Use in digital computers.

Design of a simple instrument for continuous hydrographic recording in tidal estuaries, bays and harbors. Final report under Contract Nonr 107(00), by F. G. Walton Smith. Miami. University. Marine Laboratory, Coral Gables, Fla. Oct 1953. 22p photos, drawings, diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114504

A pilot model recording harbor gage has been produced and tested. It records simultaneously temperature, density, pressure, current direction and current velocity. The unit runs for one week, with two extra days available as a safety margin, taking records every half hour. All measurements except current velocity are well within the accuracy required in harbor surveys. The costs are surveyed and recommendations given for modifications in future models. Report ML 5915. Final report, 53-14.

Dynamometers for sub-fractional horse power motors, by Tommy D. Sharp. Kentucky. Engineering Experiment Station, Lexington, Ky. Mar 1954. 79p photos, drawings, diagrs, graphs, tables Available from Engineering Experiment Station, University of Kentucky, Lexington, Ky. PB 114583

Bulletin no. 31. University of Kentucky Publications Vol. 8, no. 3.
1. Dynamometers, Electric - Design 2. Dynamometers, Electric - Torque range 3. Motors, Electric - Torque - Measurements 4. K EES B 31.

Electronic instrumentation for overvoltage measurements, by Dimitrios Staicopoulos, Ernest Yeager and Frank Hovorka. Western Reserve University. Dept. of Chemistry. Ultrasonic and Electrochemistry Research Laboratory, Cleveland, Ohio. Apr 1950. 24p photos, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 113834

Electronic instrumentation has been developed for the measurement of overvoltage (at gas electrodes in the presence of ultrasonic radiations) by the commutator or indirect method. With this device, current may be interrupted for periods ranging in length from 10 mu sec through one-half the repetition rate for repetition rates from 20 sec^{-1} through 3000 sec^{-1}. Potential measurements may be made at any time while current is either off or on during periods as short as 5 mu sec. Typical accuracy of the potential measurements of ± 5 mv for measurement periods of 10 mu sec duration at

a repetition rate of 1000 sec^{-1}. The potential measurements involve the use of a gated-bridge null detector in conjunction with an ordinary potentiometer. Contract no. N7onr 47002, Project NR 051-162. Technical report no. IV.

High temperature radiation calorimeter. Final report under Contract Nonr-471(00), by Irving Johnson. Oklahoma Agricultural and Mechanical College. Research Foundation, Stillwater, Okla. Aug 1953. 27p drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114558

This report describes a spherically symmetrical calorimeter which was constructed. The experimental results are discussed in relation to the theory. This report is divided into three parts. In the first part, the experimental apparatus is described in detail. In the second part the theory of the calorimeter is presented. In the last part, the experimental results are described and compared with the theory. Project NR 358-269.

IBM techniques in social science research, by William E. Jaynes. Ohio State University. Personnel Research Board, Columbus, Ohio. 1953. 110p diagrs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 111357

Contract N6ori-17, T. O. III, NR171-123, Studies in Naval leadership.
1. Computers, Digital - Uses 2. Punched card system 3. Sociology - Research 4. Leadership.

Investigation of the flow characteristics of control valves. Report no. 4: Steady flow test results for valve no. 1. Purdue University, Lafayette, Ind. Aug 1952. 21p drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114423

Contract no. N7onr-39414. Cooperative research project on aircraft flight control systems, PRF 687 C.
1. Valves, Control - Tests.

Method of measuring frequency detector response, by Garwood M. Rodgers. Massachusetts Institute of Technology. Research Laboratory of Electronics. Oct 1953. 7p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114500

A method of measuring distortion in a frequency detector, utilizing the frequency derivative of the detector's response curve, is presented. Ways in which this method reduces error are discussed. A laboratory application of the method is suggested. Contract DA 36-039-sc-100. Dept. of the Army project 3-99-10-022. Signal Corps project 8-102 B-O.

Non-isothermal turbulent flow in ducts: A study with the hot-wire anemometer, by R. W. Kunstman and A. Kivnick. Illinois. Engineering Experiment Station, Urbana, Ill. Sep 1952. 31p photos, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114522

The Navier-Stokes equation for fluid flow and the Fourier-Poisson equation for heat transport are expressed in a modified form suggested by Reynolds, which indicates the conditions necessary to establish similarity between the mechanisms of heat and momentum transport. A hot-wire anemometer, designed to determine the existence of those conditions, is described. Contract DA 18-064-CML-445 and Contract N6ori-71, Task order XI. ILU EES TR CML-5.

Operational aids and instructions for the National Bureau of Standards smoke colorimeter, by James D. Wilcox. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Apr 1954. 11p diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114259

The object of this report is to furnish investigators who use the National Bureau of Standards tristimulus colorimeter for colored smoke evaluation with information that will supplement that given by the National Bureau of Standards Report 2704, A Colorimeter for Pyrotechnic Smokes. Project 4-08-03-006. Supplements NBS Report 2704. CC CRL R 293.

Parking meters, a study of their number, revenue, and use, by David R. Levin. Highway Research Board. 1954. 129p photos, drawings, graphs, tables Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. $1.35. PB 114272

Presented at the 32d annual meeting, Jan 13-16, 1953.
1. Automobiles - Parking - Meters 2. HRB Bul 81.

Performance of resonant seismometers, by William L. Donn, Maurice Ewing and Frank Press. Columbia University. Lamont Geological Observatory, Palisades, N. Y. May 1954. 27p photos, diagrs, graph, maps, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114364

Contract AF 19(122)-441.
1. Seismometers - Performance 2. Hurricanes - Seismological data 3. Microseisms 4. CUN LGO TRS 36.

Photoconverter, a means for converting small direct potentials to alternating voltages, by R. A.

MacMillan. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Electronics Research Directorate. RF Components Laboratory, Cambridge, Mass. Jan 1954. 22p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114112

A novel method for converting small direct potentials to alternating voltages is presented. The "photoconverter" employs photocells and eliminates mechanically moving contacts that require maintenance and adjustment. A high impedance input of 10 or more megohms can be attained. The photoconverter is superior to previous methods in that it has excellent inherent stability over long periods of time and can be operated over a wide range of conversion frequencies. Applications of the photoconverter to the construction of a millivolt recorder and to the stabilization of computer amplifiers are also discussed. AAF CRL E 5112. AAF CRC 54-3.

Report of tests of a hot-wire prism-guider system, by Robert H. Cooper. Harvard University. High Altitude Observatory, Boulder, Colo. Mar 1954. 14p drawing, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114174

Contract no. AF 19(604)-610. Scientific report no. 1.
1. Rotation - Control equipment - Tests 2. Prisms, Rotating.

Research study leading to the use of transistors in radiac survey meters. Technical Operations, Inc., Arlington, Mass. Under Contract DA36-039-sc-42482. Dept. of the Army project no. 3-12-80-031. Signal Corps project no. 06-213A. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Quarterly progress report no. 1, Jun 15, 1952 through Sep 30, 1952, by A. R. Pearlman and R. R. Smyth. 1952. 24p diagrs, graphs, tables Microfilm $2.25, Photocopy $4.00. PB 114325

Report no. TOI 52-7.
1. Transistors - Tests 2. Transistors - Uses 3. Electrometers - Design 4. Meters, Counting-rate 5. Oscillators, Transistor.

Final report, Jun 1, 1952 through Aug 15, 1953, by Robert R. Smyth and Alan R. Pearlman. 1953. 115p photos, diagrs, graphs, tables Microfilm $5.00, Photocopy $15.25. PB 114328

Oscillator circuits have been designed around both point contact and junction transistors for the purpose of converting small amounts of d-c power at low voltage to high voltage d-c suitable for operating Geiger, proportional, or scintillation counters. Counting rate meter circuits using point contact transistors and others using junction transistors have been devised. A light weight portable Geiger counter type survey meter using an n-p-n transistor counting rate meter circuit and an n-p-n high voltage oscillator-rectifier power supply circuit has been constructed. The instrument weighs 3.5 pounds, has a volume of 90 cubic inches, and is powered by only five 1.25 volt mercury cells, which will give over 1500 hours of service. Two versions of a dynamic condenser electrometer have been designed in which junction transistors are used to perform the functions of a-c amplification and of supplying driving power to a vibrating reed voltage converter at its own resonant frequency. Report no. TOI 53-11. Appendix A: Use of dynamic condenser-electrometer in low impedance loads.

Selenium rectifiers high temperature plates. Final report, 1 Feb 1951 to 1 Feb 1952, under Contract DA36-039-sc-5461, by S. Niciejewski. Sarkes Tarzian, Inc., Bloomington, Ind. 1952. 50p drawing, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114329

This report describes the work done and the results achieved in the course of an investigation on the development of high-temperature selenium rectifier cells. The objective is described as development of a cell having characteristics equivalent to currently available good quality commercial products; but which ages much more slowly at high ambient temperatures. The method of approach is outlined, and the progress and results of sixteen distinct investigations are described. Data on several hundred experiments and 161 specific life-tests are included. Attempts to develop reliable accelerated life-test techniques, and the results to date, are described. Dept. of the Army project no. 3-26-00-602. Signal Corps project no. 32-2006-3.

Signal Corps electronic computer research and development. Final report, 3 Jan 1950 to 2 Jan 1954, under Contract no. DA36-039-sc-14. Pennsylvania. University. Moore School of Electrical Engineering, Philadelphia, Pa. Jan 1954. 17p drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photocopy $12.75. PB 114345

Each subject investigated is described as to methods of approach, conclusions, and recommendations. A bibliography of past reports with errata is supplied to provide ease of reference. Dept. of the Army project no. 3-99-10-022. Signal Corps project no. 18-102B. PEU MSEE 58-18.

Study program for the development of a hydrometer isopleth determinator. Final engineering report under Contract AF 19(122)-231, by Lawrence Eisenberg. Polytechnic Research & Development Co., Inc., Brooklyn, N. Y. Feb 1954. 42p diagrs (part fold), graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114169

1. Radar - Reflectors - Design 2. Hydrometers - Design.

Symposium on managerial aspects of digital computer installations. Navy mathematical computing advisory panel meeting, 30 Mar 1953. U. S. Office of Naval Research. 1953. 40p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114567

Contents: Operation of the National Bureau of Standards Computation Laboratory, by John Todd. - SEAC installation, engineering considerations, by S. N. Alexander. - Operation of IBM technical computing bureaus, by George W. Petrie. - Operation of the Ballistic Research Laboratories digital computer installation, by Werner W. Leutert. - Operation of the Naval Proving Ground computer installation, by Ralph A. Niemann. - Census experience operating a UNIVAC system, by James L. McPherson.
1. Computers, Digital - Operation 2. SEAC (Standards Eastern Automatic Computer) 3. UNIVAC (Computer).

Symposium on oceanographic instrumentation, a conference held at Rancho Santa Fe, California, 21-23 Jun, 1952 under the sponsorship of the Office of Naval Research. Edited by John D. Isaacs and Columbus O'D. Iselin. 1954? 243p photos, drawings, diagrs, graphs, map, tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. $1.75. PB 114616

Contents: I. Considerations of oceanographic instrumentation, by John D. Isaacs. - II. Measurements of the oceanic circulation in temperate and tropical latitudes, by William S. von Arx. - III. Biological instruments, by Elbert H. Ahlstrom. - IV. Oceanographic instruments for measuring temperature, by Allyn C. Vine. - V. Geophysical measurements, by Russell W. Raitt. - VI. Sea-ice problems, by Clifford A. Barnes. - VII. Acoustic instrumentation as a tool in oceanography, by J. B. Hersey. - VIII. Considerations in the construction of oceanographic vessels, by William V. Kielhorn. - IX. Wave measurements, by Frank E. Snodgrass. - X. Chemical measurements, by Dayton E. Carritt. - XI. Methods of exploring the ocean floor, by Robert S. Dietz. - XII. Air-sea boundary processes, by Walter H. Munk.
1. Instruments, Oceanographic 2. Instruments, Biological 3. Instruments, Seismological 4. Instruments, Acoustic 5. Ocean temperature - Measurement 6. Ships, Oceanographic 7. Waves, Ocean - Measurement 8. Ocean bottom - Sampling 9. Oceanography - Research.

Twenty-channel amplitude analyzer for underwater sound research, by D. L. Davidson, K. M. Murray, and R. Q. Tillman. U. S. Naval Research Laboratory. Apr 1954. 10p photos, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114185

The analyzer has a maximum counting rate of 100 pulses per second and a minimum signal-gate length of approximately 0.5 millisecond. It may be used as a single 20-channel analyzer or as two separate 10-channel analyzers. Quick, simple calibration makes the analyzer an absolute-reading instrument for decibel as well as linear voltage measurements. NRL R 4340.

Use of quenching circuits with self-quenching counters. Scientific report no. 2 under Contract no. AF 19(122)-439, by Kenneth Greisen. Cornell University. Laboratory of Nuclear Studies, Ithaca, N. Y. Jan 1954. 28p diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114035

The advantages associated with the use of a one-tube quenching circuit, to assist and hasten the termination of the discharge in self-quenching counters, are discussed. Two types of quenching are distinguished, depending on the duration of the quenching pulse; the different virtues and failings of these two types of external quenching are outlined. An appendix gives supplementary considerations on the motion of the charge sheath in externally quenched and in unquenched counters. Appendix: Behavior of charge sheath in Geiger counters.

LUMBER AND WOOD PRODUCTS

Assembly and calibration of a laboratory fractionating column for naphthenic acid distillations, by L. A. Bennett, T. A. McLelland, and G. N Christensen. Australia. Commonwealth Scientific and Industrial Research Organization. Div. of Forest Products. Forest Products Laboratory, South Melbourne, Australia. Feb 1950. 12p drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114318

Project P. 9: Properties of wood preservatives. Sub-project P. 9-4: Tests of metallic naphthenates prepared from different naphthenic acids for use as wood preservatives. Progress report no. 1.
1. Fractionating columns - Design - Australia 2. Fractionating columns - Calibration - Australia 3. Naphthenic acids - Distillation - Equipment - Australia.

Development of a laboratory technique for testing the toxicity of copper naphthenate, by R. E. Kneale and N. Tamblyn. Australia. Commonwealth Scientific and Industrial Research Organization. Division of Forest Products. Forest Products Laboratory, South Melbourne, Australia. May 1950. 18p photo, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114319

Sub-project P 9-4, Progress report no. 2.
1. Naphthenic acid, Copper salt - Fungicity - Test methods - Australia 2. Fungicides - Test methods - Australia.

Fractionation of naphthenic acids and toxicity of the fractions to wood destroying fungi before and after conversion to copper naphthenate, by S. J. Wilson, R. E. Kneale, and N. Tamblyn. Australia. Commonwealth Scientific and Industrial Research Organization. Div. of Forest Products. Forest Products Laboratory, South Melbourne, Australia. Sep 1953. 23p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114321

Sub-project P. 9-4, Progress report no. 4.
1. Naphthenic acids - Fractionation - Australia
2. Naphthenic acids - Fungicity - Tests - Australia
3. Naphthenic acid, Copper salt - Fungicity - Tests - Australia.

Non-destructive testing of wood laminates. Louisville. University. Institute of Industrial Research, Louisville, Ky. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Report for July 1, 1953 to August 31, 1953, by S. V. Galginaitis and E. R. Bell. Aug 1953. 9p Microfilm $1.50, Photocopy $1.50. PB 114021

The relative transmission of a set of laminated boards for sound waves of frequency 300 Kc has been determined. Complete delaminations were readily detected, with a resolution of about $\frac{1}{2}$ square inch. In the event only a weak glue joint existed, with no delamination, the defect was found only about 60% of the time. Decay curves for various solid and laminated samples have been obtained, and the logarithmic decrements determined. These results were then compared with the results of destructive tests

Progress report for Sep 28, 1953 to Nov 25, 1953, by S. V. Galginaitis and G. Gazo. Nov 1953. 8p table Microfilm $1.50, Photocopy $1.50. PB 114611

1. Wood, Laminated - Tests 2. Non-destructive tests.

Tests of pole treatments in New South Wales using E. grandis, E. maculata, E. pilularis, and E. saligna pole stubs. Sixth inspection and third retreatments, 1951, by G. W. Tack and J. Beesley. Australia. Commonwealth Scientific and Industrial Research Organization. Div. of Forest Products. Forest Products Laboratory, South Melbourne, Australia. Aug 1952. 33p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114322

Sub-Project P. 6-5, Progress report no. 7.
1. Wood - Fungus proofing - Tests - Australia
2. Poles, Wood - Fungus proofing - Tests - Australia
3. Fungicides - Tests - Australia.

Toxicity of naphthenic acid and copper naphthenate to wood destroying fungi, by R. E. Kneale and N. Tamblyn. Australia. Commonwealth Scientific and Industrial Research Organization. Div. of Forest Products. Forest Products Laboratory, South Melbourne, Australia. Aug 1951. 20p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114320

Sub-project P. 9-4, Progress report no. 3.
1. Naphthenic acids - Fungicity - Tests - Australia
2. Naphthenic acid, Copper salt - Fungicity - Tests - Australia 3. Fungicides - Tests - Australia.

MACHINERY

Capital requirements and operating ratios: The agricultural machinery industry, 1950 and 1951. Pennsylvania. University. Wharton School of Finance and Commerce. Industrial Research Dept. Apr 1954. 45p tables Available from U. S. Bureau of Labor Statistics, Washington 25, D. C. PB 114602

Prepared for the Foreign Operations Administration, Industrial and Technical Assistance Division in cooperation with the U. S. Dept. of Labor, Bureau of Labor Statistics.
1. Agricultural machinery - Manufacture 2. BLS R 25.

Design and testing of a Mach 4 axially symmetric nozzle for rarefied gas flows, by J. M. Owen and F. S. Sherman. California. University. Institute of Engineering Research, Berkeley, Calif. Jul 1952. 107p drawing, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photocopy $14.00. PB 114473

Contract N7-onr-295, Task 3, Project NR061-003. Report no. HE-150-104.
1. Gases, Rarefied - Flow 2. Nozzles, Supersonic - Design 3. Nozzles, Supersonic - Tests 4. Wind tunnels - Nozzles, Axially summetric - Design 5. Wind tunnels - Nozzles, Axially symmetric - Tests 6. UC IER ser. 20, no. 91.

Druckschwangkungen in der auspuffleitung und der wirkungsgrad von abgasturboladern (Pressure fluctuations in the exhaust line and the efficiency of exhaust gas turbo-superchargers), by K. Zinner. Translated and edited by F. A. Raven. Jun 1954. 40p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114603

Translated from M. A. N. Forschungsheft 1953, p. 1-16 (Publication of the Mannheim-Augsburg-Nurnberg Maschinenfabrick G.m.b.H.)

1. Exhaust gases - Pressure - Germany 2. Exhaust gases - Use in superchargers - Germany 3. Superchargers, Exhaust driven - Germany 4. NAVSHIPS T 561 5. STS 195.

Dynamische tragfähigkeit der wälzlager bei berücksichtigung der lagerluft (Dynamic bearing power of roller bearings with consideration for the "bearing air"), by G. Lundberg. Translated and edited by F. A. Raven. Jun 1954. 30p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114655

Translated from Forschung auf dem Gebiete des Ingenieurwesens, vol. 18, no. 4, p. 97-105, 1952.
1. Roller bearings - Theory - Germany 2. Roller bearings - Axial bearing air - Germany 3. NAVSHIPS T 562 4. STS 196.

Program of research in the field of turbulent flow in ducts in a space of revolution, and in turbomachinery, by George F. Wislicenus and Hsuan Yeh. Johns Hopkins University. Dept. of Mechanical Engineering. Dec 1952. 72p photos, drawings (1 fold), diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photocopy $10.25. PB 113395

Contract Nonr 248(33). Internal Flow Research - Report I-8.
1. Flow, Turbulent - Research 2. Ducts, Air - Turbulent flow 3. Turbines - Flow 4. Engines, Turbine propeller - Theory 5. Jet propulsion units - Research.

Radial flow turbine in comparison with the axial turbine, by Eugen Knoernschild. Mar 1948. 32p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114446

With decrease in size of the turbine, the efficiency of the radial turbine decreases less than does the efficiency of the axial turbine. There is a limit below which an axial turbine can no longer compete with a radial turbine. The low impeller weight of the radial turbine results in a thin shaft, and thus in a low runner weight, with less difficulties from critical speeds. The radial turbine is less sensitive to dirt and to minor damages; and furthermore, the production cost for a single-stage radial turbine is considerably smaller than that for an axial turbine. Paper read at the subcommittee meeting on turbines of the National Advisory Committee for Aeronautics, Washington, D. C. on 16 Mar 1948. AAF TR 1198.

Recommended standards for operating screw press mills in processing cottonseed, by A. Cecil Wamble and William B. Harris. Texas. Engineering Experiment Station, College Station, Texas. Apr 1954. 14p graphs, tables Available from Texas Engineering Experiment Station, Texas A. & M. College System, College Station, Texas. PB 114415

Publication resulting from research conducted by the Texas Engineering Experiment Station for the U. S. Department of Agriculture and in cooperation with the Cotton Research Committee of Texas.
1. Cottonseed - Processing 2. Presses, Screw - Operation 3. Texas. Agricultural and Mechanical College, College Station, Texas 4. Cotton Research Committee of Texas 5. TU EES RR 47.

MEDICAL RESEARCH AND PRACTICE

Apparatus for establishing the come-up time process for the heating and pasteurization of fluids, by Warren Litsky, R. B. Read, Jr., D. J. Hankinson, and R. R. Brown. Massachusetts. Agricultural Experiment Station, Amherst, Mass. 1954? 20p photos, diagr, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.75. PB 111507

Investigation supported by a research grant, G-3853, from the National Institutes of Health, Public Health Service.
1. Milk - Pasteurization - Machinery 2. Milk - Sterilization 3. Milk - Effect of high temperature.

Biochemistry of tissue trauma. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Under project no. 21-1601-0017. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

V: A prolonged hyperlipemia in rabbits subjected to repeated traumatic injury, by Lawrence J. Milch, Robert F. Redmond, and William W. Calhoun. Apr 1954. 6p diagrs, graphs, tables Microfilm $1.50, Photocopy $1.50. PB 114275

A prolonged hyperlipemia and hyperlipoproteinemia have been induced and maintained in rabbits by repeated traumatic injury. Blood lipid increases were accompanied by a significant anemia and decreased plasma and serum inorganic ion levels but no significant changes in aortal or kidney tissue lipid concentrations.

VI: The effect of crushing injury on plasma lipids and lipoproteins, by Robert F. Redmond, Lawrence J. Milch, William W. Calhoun, and Henry M. Sweeney. Apr 1954. 8p tables Microfilm $1.50, Photocopy $1.50. PB 114271

Highly significant increases in plasma cholesterol, lipid phosphorus, and lipoproteins of the S_f 0-12, 12-20, and 20-100 classes were observed following a localized crushing injury to the lower portion of the right hind limb of the rabbit.

Biological and medical aspects of ionizing, radiation. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Under Project no. 21-3501-0005. Order separate parts described

below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Report 11: Effects of whole-body radiation in guinea pigs while under various simulated flying conditions, by Eugene B. Konecci and William F. Taylor. Apr 1954. 13p photos, graphs, tables Microfilm $2.00, Photocopy $2.75. PB 114197

Results indicated that the general conditions met while flying were not detrimental to the guinea pig in combination with exposure to ionizing radiation.

Report 15: Sequelae following application of high-intensity X-radiation to the head of rabbits, by Herbert B. Gerstner, John E. Pickering, and Alois J. Dugi. May 1954. 8p drawings, diagr, tables Microfilm $1.50, Photocopy $1.50. PB 114556

The most outstanding features of the convulsive phase were repeated epileptoid seizures, whereas, the characteristic symptoms of the ataxic phase were severe disturbances of posture, equilibrium, and movement.

Biophysical and pathological effects of explosive decompression, by Domenic A. Vavala. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Jun 1954. 28p photos, drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114339

A comprehensive study of experimental and clinical data has been conducted to determine the present status of knowledge on the subject of explosive decompression. Some of the pertinent anatomical relationships of the thoracic region, which might become involved in the mechanical trauma and effects following explosive decompression, are presented and discussed. Included, also, are graphs, tables, photographs, x-rays, and case histories which should help in understanding the various aspects of explosive decompression. AAF SAM Proj. Unnumbered report.

Biosynthesis and concentration of cholesterol by the intact surviving bovine aorta in vitro, by N. T. Werthessen, Lawrence J. Milch, Robert F. Redmond, Leland L. Smith, and E. C. Smith. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Apr 1954. 9p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114274

After determining the longitudinal distribution of cholesterol concentrations in the normal aorta, it was demonstrated that after perfusion in organ culture significant increases of aortal cholesterol concentrations can be observed. It was also noted that such increased cholesterol concentrations were related to the rates of glucose consumption by the surviving tissue. Contract no. AF 18(600)-303. AAF SAM Proj 21-1601-0007, Report no. 5.

Capillary technique for the determination of cholinesterase activity in red blood cells and plasma, by Jane L. Stubbs and John T. Fales. U. S. Chemical Corps. Medical Laboratories, Army Chemical Center, Md. Aug 1953. 11p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114561

A technique is described and evaluated for the determination of cholinesterase activity in both red blood cells and plasma using capillary blood obtained by finger puncture. Project no. 4-59-12-007, CC MD RR 203.

Changes in brain blood volume during acclimatization to high altitude, by Nancy E. R. Pawel, Robert T. Clark, and Herman L Chinn. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Apr 1954. 7p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114289

The brain blood volume of rats increased by 11.7 percent during acclimatization to 18,000 feet. The systemic blood volume during the same period increased by 31 percent. The discrepancy between brain and systemic blood increases during acclimatization is discussed. AAF SAM Proj 21-1201-0009, Report no. 4.

Consumption as a random variable, a statistical study of the consumption of supplies by individual medical units, by Joseph B. Kruskal, Jr. and J. Jay Wolf. George Washington University, Washington, D. C. n.d. 10p fold table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114630

Contract N7onr-419, Task order 4.
1. Poisson's ratio 2. Consumption (Economics) - Theory 3. Medical supplies.

Early diagnosis of blood stream infections. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Under Contract no. AF 41(607)-41. Proj. no. 21-1401-0005. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

A: Studies on the effect of gastric mucin on the antibacterial action of normal blood, by Frank B. Engley and Martha Jordan. May 1954. 21p tables Microfilm $2.00, Photocopy $2.75. PB 114338

The antibacterial action varies from species to species and from individual to individual. The range of antibacterial activity of human blood suggests a possible role of this inhibitory action in the delay of obtaining positive cultures and in the number of negative blood cultures from patients of suspected bacteremia or septicemia.

B: Gastric mucin as an adjuvant in blood cultures, by Frank B. Engley, Carl F. Page, and Martha Jordan. May 1954. 9p graphs, table Microfilm $1.50, Photocopy $1.50. PB 114363

The procedure offers a more rapid and sensitive technic for blood culture for suspected bacteremia and septicemia. AAF SAM Proj 21-1401-0005, Report no. 8.

Evaluation of methods for determining blood volume, by the staff, Department of Physiology of the College of Physicians and Surgeons, Columbia University. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Apr 1954. 85p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.00, Photocopy $11.50. PB 114236

Contract no. AF 33(038)-25899. Contents: No. 4. Effects of alteration in blood volume and venous hematocrit in splenectomized dogs on the estimates of total blood volume with P^{32} and T-1824, by E. B. Reeve, M. I. Gregersen, T. H. Allen, H. Sear, W. W. Walcott. - No. 5. Validity of cell and blood volume measurements in the bled splenectomized dog, by E. B. Reeve, M. I. Gregersen, T. H. Allen, H. Sear, W. W. Walcott. - No. 6. Simultaneous measurements of cell volume with Fe^{55} and P^{32} in splenectomized dogs, by E. B. Reeve, J. L. Nickerson, H. Sear. - No. 7. Errors in measuring cell volume resulting from the use of incompatible P^{32} labeled cells, by S. Jonas, E. B. Reeve. - No. 8. Simultaneous determinations in splenectomized dogs of cell volume with CO and P^{32} and plasma volume with T-1824, by W. S. Root, T. H. Allen, M. I. Gregersen. - No. 9. Comparison of plasma volumes done by direct photometry and by extraction of T-1824 in dog and man, by T. H. Allen. - No. 10. Spectral absorption of T-1824 in plasma of various species and recovery of the dye by extraction, by T. H. Allen, M. Ochoa, Jr., R. F. Roth, M. I. Gregersen. - No. 11. Simultaneous measurement in dogs of plasma volume with I^{131} human albumin and T-1824 with comparisons of their long-term disappearance from the plasma, by H. Sear, T. H. Allen, M. I. Gregersen. - No. 12. Simultaneous measurement of plasma volume with hemoglobin and with T-1824, by T. H. Allen, C. Pallavicini, M. I. Gregersen. - No. 13. Distribution of "extra" plasma in the blood of some tissues in the dog as measured with P^{32} and T-1824, by T. H. Allen and E. B. Reeve. - No. 14. Proportion of "extra plasma" in the eviscerated dog, by M. I. Gregersen, L. J. Cizek, T. H. Allen.
1. Blood - Volume - Determination - Methods 2. Blood - Volume - Effects of spleen 3. Blood plasma - Chemical analysis 4. T-1824 method (Measurement of plasma volume) 5. AAF SAM Proj 21-2301-0005, reports no. 4-14.

Performance capacity in acute starvation with hard work, by Austin Henschel, Henry Longstreet Taylor, and Ancel Keys. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Mar 1954. 12p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114270

It was concluded that physical deterioration associated with the loss of 40 to 50 gm. of nitrogen under the stated conditions is repaired within 3 to 5 days of refeeding. Contract no. AF 33(038)-21914. AAF SAM Proj 21-32-004, Report no. 6.

Quantitative histologic distribution of ascorbic acid in the adrenal gland of the rat and monkey, by Robert C. Bahn and David Glick. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Dec 1953. 9p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114249

Although the concentration of ascorbic acid is 4 to 5 times greater in the gland of the rat than it is in that of the monkey, the same qualitative distribution of ascorbic acid was found in both. Contract no. AF 18(600)-169. Appendix: Technique for sacrificing animals to obtain tissues for studies on stress effects, by David Glick, Richard H. Swigart, Robert C. Bahn, and Donald W. Hastings. AAF SAM Proj, Unnumbered report.

Some effects of acute starvation with hard work on body weight, body fluids, and metabolism, by Henry Longstreet Taylor, Austin Henschel, Olaf Mickelsen, and Ancel Keys. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Mar 1954. 12p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114269

Healthy young men were starved from 2.5 days to 4.5 days while performing treadmill work which required a total daily expenditure of 3,500 to 4,000 Cal. a day. The associated changes in body weight, body fluids, and metabolism, are described. Analogous data collected during a refeeding period are presented. Contract no. AF 33(038)-21914. AAF SAM Proj 21-32-004, Report no. 5.

Studies on cutaneous heat losses. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Aero-Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Under Contract no. AF18(600)-96 with St. Louis University. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part 12: Factors influencing the significance of local sweating responses, by Alrick B. Hertzman, Walter C. Randall, Clarence N. Peiss, James G. Adams. Jan 1954. 27p diagrs, graphs, tables Microfilm $2.25, Photocopy $4.00. PB 114175

1. Skin - Heat loss 2. Temperature - Physiological effects 3. Sweat - Collection methods 4. Sweat - Measurement 5. Sweat glands - Cycling activity 6. Sweat glands - Physiology 7. Evaporation, Cutaneous 8. AAF TR 6680, Part 12.

Part 13: Cutaneous thermosensory recruitment of sweating, by Alrick B. Hertzman, Walter C. Randall, Clarence N. Peiss, James G. Adams. Dec 1953. 23p graphs, tables Microfilm $2.25, Photocopy $4.00. PB 114176

1. Temperature - Physiological effects 2. Skin - Heat loss 3. Sweat - Effects of temperature 4. Sweat glands - Physiology - Effect of temperature 5. Body, Human - Sweat - Measurement 6. Evaporation, Cutaneous 7. AAF TR 6680, Part 13.

Part 14: Analysis of the desiccating capsule technique in the measurement of regional water losses from the skin, by Walter C. Randall, Clarence N. Peiss and Alrich B. Hertzman. Dec 1953. 22p drawing, graphs, tables Microfilm $2.25, Photocopy $4.00. PB 114177

1. Skin - Heat loss 2. Skin - Water loss - Measurement 3. Heat - Physiological effects 4. Sweat - Collection methods 5. Sweat - Measurement 6. Evaporation, Cutaneous 7. Sweat glands - Physiology 8. Capsules, Desiccating - Uses 9. Alumina, Activated - Absorptive properties 10. AAF TR 6680, Part 14.

METALS AND METAL PRODUCTS

Correlation of high temperature rupture data for niobium, by Raymond L. Orr and Douglas W. Bainbridge. California. University. Institute of Engineering Research, Berkeley, Calif. Jul 1953. 10p graph, table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111349

Stress-rupture data for niobium were obtained at 1144°K under four stress conditions between 18,000 and 25,000 psi. These data correlated well with existing rupture data for the same material at 1255°K by means of relation $t_{re} - \Delta H_r/RT = f(\sigma)$, where σ is the stress, T is the absolute temperature, R is the gas constant, and ΔH_r is the experimental activation energy for rupture. ΔH_r was found to be equal to 75,000 calories per mole for niobium. 28th technical report under Contract N7onr-295, Task order II, NR-031-048. UC IER ser. 22, no. 28.

Correlations of rupture data for metals at elevated temperatures, by Raymond L. Orr, Oleg D. Sherby and John E. Dorn. California. University. Institute of Engineering Research, Berkeley, Calif. Jul 1953. 30p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111348

Stress-rupture data for pure metals and high strength alloys at elevated temperatures are correlatable by means of the equation $t_{re} - \Delta H_r/RT = f(\sigma)$, where σ is the applied stress, T is the absolute temperature, tr is the time to rupture, R is the gas constant, and ΔH_r is the activation energy for rupture. These correlations are successfully applied to data for aluminum, beryllium, titanium, nickel, niobium, molybdenum, and several representative high strength commercial alloys. 27th technical report under Contract N7-onr-295, Task order II, NR-031-048. UC IER ser. 22, no. 27.

Effect of alloying elements on the mechanism of sulfur transfer across a slag-metal interface: Silicon, manganese, phosphorus, aluminum, carbon, nickel, copper, by K. M. Goldman, G. Derge, W. O. Philbrook. Carnegie Institute of Technology. Metals Research Laboratory, Pittsburgh, Pa. Oct 1953. 35p photos, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114385

This paper shows the influence on the process of the individual elements, C, Si, Mn, P, the alloying elements normally present and of interest in commercial blast furnace operations, Al, which has a pronounced accelerating influence, and Ni and Cu, which are common minor impurities in the raw materials. Contract N6ori-47/IV, Project NR 031-014.

Investigation of refractories suitable for melting titanium and its alloys. Summary report for the period 10 Apr 1951 to 10 Aug 1952, by M. Eisenberg and J. A. Stavrolakis. Armour Research Foundation, Chicago, Ill. Aug 1952. 31p drawings (2 fold), fold graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114343

Theoretical analysis of the published data pertaining to simple and complex fluorides suggested that it would be possible to produce certain fluoride and oxyfluoride complexes with melting points high enough to render them infusible at the temperature of molten titanium. Attempts were made to prepare several synthetic oxyfluoride minerals, as well as a number of new oxyfluoride compounds. Contract AF 33(038)-23280. ARF Proj 90-1004G, summary report.

Ferromagnetic resonance absorption in cobalt single crystals, by Taiichiro Ohtsuka. Harvard University. Cruft Laboratory. Aug 1953. 30p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114279

Ferromagnetic resonance absorption of cobalt single crystals has been measured at ~24,200 Mc/s. The temperature range was restricted to 200°C (180°C to 380°C) due to the high anisotropy energy and the phase transition at 430°C. The anisotropy constants K_1' and K_2', the g-factor and the line width were determined at these temperatures using three single crystals of different crystallographical orientation. Contract N5ori-76, T. O. no. I, NR-078-011. HU CL TR 187.

Fundamentals of the transition temperature phenomenon in steel. Eighth progress report under Contract Nonr 266(07) for the period 1 Jul 1953-30 Sep 1953, by J. O. Brittain and M. Gensamer. Columbia University. Sep 1953. 7p graph, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114670

1. Steel - Transition temperature 2. Iron - Hydrogenation 3. Grain size - Effect on temperature.

Investigation of the bonding of silicon carbide by metals, by Richard A. Alliegro and James R. Tinklepaugh. New York State College of Ceramics, Alfred, N. Y. Jan 1953. 33p photos, drawings, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111415

A study of the bonding of silicon carbide by various metals was conducted using several techniques: (1) Reaction products from thermodynamic data. (2) Wetability of silicon carbide by metals. (3) Reaction products of silicon carbide and metals by metallographic reaction zone studies and x-ray diffraction identification. (4) Examination of hot pressed metal-carbide parts. Contract no. AF 33(038)-16190-2. Summarizes work on this project from 11 Jan 1952 through 11 Jan 1953. AAF WADC TR 53-5.

Measurements of the build-up of cobalt-60 gamma radiation in iron and lead, by C. Garrett and G. N. Whyte. National Research Council of Canada. Division of Physics. Mar 1954. 19p drawing, graphs, tables Available from National Research Council of Canada, Ottawa, Canada. $.25. PB 114298

This report describes measurements of the transmission of gamma radiation from a "point isotropic" cobalt-60 source through iron and lead out to a distance of approximately 15 mean-free-paths. The dose build-up factors derived from the observed transmissions agree satisfactorily with the NDA-NBS calculations. Divisional report no. PR-218. NRCC 3257.

Mechanical properties of bainitic and martensitic steels. Annual summary report for the period Feb 1, 1952 to Feb 1, 1953, report no. 13 under Contract no. AF 33(038)-10218. Carnegie Institute of Technology. Metals Research Laboratory, Pittsburgh, Pa. Feb 1953. 85p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.00, Photocopy $11.50. PB 113328

Project no. 463-6-1.

Method for revealing imbedded abrasive particles in sandblasted steel surfaces, by L. O. Gilbert. U. S. Arsenal, Rock Island, Ill. Aug 1950. 11p photos Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111392

Clean ferrous metal surfaces are dyed an orange color when immersed in Chrysordine R dye solution. The dye is adsorbed or reacts with the free metal surface and exhibits no tendency to adsorb on the imbedded silica or alumina particles. Sandblasted panels examined by this technique have in some cases been estimated to have in excess of 5% of the total apparent surface covered with imbedded fragments of silica sand. The longer the blasting treatment the finer the imbedded particles become, but the overall percentage remains approximately the same. Application of the dyeing technique to abrasive paper polished steel surfaces revealed a small abrasive grain at the end of some of the microscopic scratches in the surface. Project no. TB4-301 E, Report no. 2. RIAL R 50-1613.

New high temperature intermetallic materials, by William Arbiter. American Electro Metal Corporation, Yonkers, N. Y. May 1953. 91p diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 111413

The details of the preparation and testing of intermetallic compounds formed between the elements: iron, cobalt, nickel, chromium, manganese, and zirconium with the elements: titanium, silicon, zirconium, columbium, tantalum and molybdenum are reported. A composition whose starting compounds were 95% Cr_2T_1 and 5% Cr_2O_3 has shown promising high temperature properties, including good oxidation resistance and high stress-to-rupture strength. Summarizes work under Contract no. AF 33(616)-109 from 1 May 1953 through 30 Apr 1953. AAF WADC TR 53-190.

New investigations of the bands of the oxide of aluminum, by Elisabeth Bodson and Francine Dehaln, translated by Earle B. Mayfield. U. S. Naval Ordnance Test Station, Inyokern, Calif. Apr 1952. 15p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114477

Translated from Bulletin of the Royal Academy of Belgium (Sciences Group) 17 Apr 1937, no. 4.
1. Aluminum oxide - Spectrum analysis - Belgium 2. Spectroscopy, Molecular - Belgium 3. Molecules - Vibration - Theory - Belgium 4. NOTS TM 906.

Penetration of gamma radiation through iron, by L. A. Beach, R. B. Theus, and W. R. Faust. U. S. Naval Research Laboratory. Apr 1953. 14p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114685

Measurements have been made on the penetration through iron by Cs^{137}, Co^{60}, and Na^{24} gamma radiation in plane parallel geometry. Good agreement was obtained between the experimental transmissions and theoretical values computed from Spencer's polynomial method. NRL R 4145.

Properties of anodic aluminum oxides, a study of the surface roughness, by R. L. Burwell, Jr., P. A. Smudski, and T. P. May. U. S. Naval Research Laboratory. Apr 1947. 54p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114143

1. Aluminum oxide - Surface properties 2. Ethylene - Adsorption 3. Nitrogen - Adsorption 4. NRL C-3093.

Purification of commercial potassium, an A.E.R.E. report, by G. W. Horsley. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Jan 1954. 18p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 114288

HD.1122. S. O. code no. 70-674-1-62.
1. Potassium - Purification - Gt. Brit. 2. Atomic power - Research - Gt. Brit. 3. AERE M/R 1371.

Radiometric study of the iron phosphating process, by S. L. Eisler and Jodie Doss. U. S. Arsenal, Rock Island, Ill. Aug 1953. 25p photos, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111400

The amount of PO_4^{-3} deposited on steel test panels from solutions H_3PO_4, NaH_2PO_4 and from a commercial iron phosphating preparation was determined using radiometric techniques. The amount of $FePO_4 \cdot 2H_2O$ per sq. ft. of steel surface was calculated from the data mentioned above. The percentage of $FePO_4 \cdot 2H_2O$ was then determined by comparison with the total coating weights determined gravimetrically. Project no. TB4-302 D (D/A 593-14-006), Report no. 9. RIAL R 53-2996.

Rare alkalis in New England, by Frank L. Hess, Roscoe J. Whitney, Joseph Trefethen and Morris Slavin. U. S. Bureau of Mines. Jan 1943. 62p photos, diagrs, tables Available from U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh, Pa. PB 114653

1. Alkalies 2. Pegmatites - Occurrence 3. Cesium - Occurrence 4. Rubidium - Occurrence 5. Lithium - Occurrence 6. BM IC 7232.

Relation between hardness plateaus and twinning in explosively loaded mild steel, by John Pearson and John S. Rinehart. U. S. Naval Ordnance Test Station, Inyokern, Calif. Jul 1953. 24p photos, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114481

Hardness measurements were made along radii of circular cross sections of an annealed thick-walled low-carbon steel cylinder internally loaded with an explosive charge. The degree of work hardening in the cylinder wall decreases with distance from the surface in contact with the explosive and is related to the magnitude of the high intensity transient stress wave generated by the explosive loading. The hardness measurements show the presence of a series of constant hardness plateaus in the wall of the cylinder. The presence of the hardness plateaus and the increase in the number of twin directions with hardness and stress level point to the existence of critical stresses for twinning. NOTS TM 1554.

Research on shell molding. Massachusetts Institute of Technology. Division of Industrial Cooperation. Final report under Contract no. DA19-020-ord-1961. 1953. 54p photos, drawing, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 111401

Factors which influence resin consumption in making shell molds were studied by means of strength tests. Polished sections of shell specimens were used to study the mechanism of bonding and fracturing in shell molds. Experiments were made with surface preparation of sand to increase bonding efficiency of the resin, and with vibration to improve packing and so produce shell molds with less resin. Phenol and formaldehyde vapor treatment was investigated as a means for manufacturing thermosetting resin directly on the surface of sand. Various sand-resin mixtures were evaluated in making shell molds, and in producing castings of aluminum- and copper-base alloys. Cooling rates of castings in shell and green sand molds were measured to study heat transfer, and special castings were made to investigate breakdown time of shell molds.

Role of nickel dip in enameling of sheet steel, by D. G. Moore, J. W. Pitts and W. N. Harrison. U. S. National Advisory Committee for Aeronautics. Jun 1954. 27p photos, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114335

An investigation was made of the effects of the firing time and the weight of the nickel deposited from the nickel-dip solution on the adherence developed by a cobalt-free and a cobalt-bearing ground-coat enamel on both enameling iron and a titanium-bearing low-carbon steel. NACA TN 3207.

Shear stress-strain curves for sheet material, by Walter Ramberg and James A. Miller. U. S. National Bureau of Standards. Jun 1953. 32p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114482

Final report, Government order NAonr-161-53, P. J. NR-064-332.
1. Shear stress - Measurement - Methods 2. Strain measurements - Methods 3. Aluminum alloys - Stresses 4. Torsion testing machines 5. Annulus method (Stress-strain tests) 6. NBS 2573.

Some observations on grain boundary shearing during creep, by Bernard Fazan, Oleg D. Sherby, and John E. Dorn. California. University. Institute of Engineering Research, Berkeley, Calif. Nov 1953. 21p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114677

Quantitative measurements of the contribution of grain boundary shearing to the creep process were made for high purity aluminum in the temperature range 610°K to 747°K under a stress of 250 psi. The relative contribution of grain boundary shearing to the total creep strain is shown to be independent of the test temperature but, as revealed by McLean, it increases as the creep stress decreases. Contract N7-onr-295, Task order II, NR-031-048, Thirty-second technical report. UC IER ser. 22, no. 32.

Thermionic and crystal properties of tungsten and tantalum, by M. H. Nichols and G. F. Smith. California Institute of Technology. Dept. of Electrical Engineering, Pasadena, Calif. Jun 1952. 177p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.75, Photocopy $22.75. PB 114581

Final report on Contract N6-onr-24433.
1. Molybdenum - Crystal structure 2. Tantalum - Crystal structure 3. Tungsten - Crystal structure 4. Crystals, Molybdenum - Growth 5. Crystals, Tantalum - Growth 6. Crystals, Tungsten - Growth 7. Screens, Fluorescent 8. Schottky coefficients 9. Thermionic emissions.

Time-temperature parameters and an application to rupture and creep of aluminum alloys, by George J. Heimerl. U. S. National Advisory Committee for Aeronautics. Jun 1954. 35p graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114553

The application of time-temperature parameters to stress-strain, rupture, and creep data for metals and alloys is reviewed. Some comparisons are made of theoretical and experimental parameters. Master curves of stress against the parameter which summarize extensive data on the aluminum alloys are presented for rupture, minimum creep rate, and time to 1 or 2 percent strain. NACA TN 3195.

Transformation of austenite under externally applied tensile stress. Sixth quarterly progress report for the period Jun 1, 1953 to Aug 31, 1953 under Contract Nonr-266(18), by George L. Kehl and Subrata Bhattacharyya. Columbia University. Oct 1953. 11p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114386

For 7th report see PB 113584.
1. Austenite - Stresses 2. Austenite - Transformation 3. Bainite - Microstructure.

METEOROLOGY AND CLIMATOLOGY

Atmospheric oscillations. Final report under Contract no. AF 19(122)-49, by B. Haurwitz. New York University. College of Engineering. Dept. of Meteorology and Oceanography. Apr 1954. 97p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photocopy $12.75. PB 114604

Project no. 122.
1. Oscillations, Atmospheric 2. Airflow - Turbulence 3. Solar flares - Meteorological effects.

Marine meteorology. Technical reports nos. 8 and 9 under Contract N6onr-27702 (NR-082-021), by Andrew F. Bunker and Donald Parson, Jr. Woods Hole Oceanographic Institution, Woods Hole, Mass. Oct 1953. 31p photo, diagrs, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114391

Contribution no. 572 and no. 558. Contract N6onr-277, Task order no. II, NR-082-021. Contents: Ref. no. 51-40. Recognition of the presence of convective currents within a nonsaturated turbulent layer of the atmosphere, by A. F. Bunker. - Ref. no. 51-41. A recording computer for the direct measurement of the turbulent heat exchange in the atmosphere, by D. Parson, Jr. and A. F. Bunker. From International symposium on atmospheric turbulence in the boundary layer, 4-8 June 1951 (Geophysical research papers no. 19, p. 309-322, 369-379).
1. Correlation functions 2. Computers, Heat exchange - Design 3. Atmosphere - Heat transference - Measurement 4. Eddy currents 5. Flow, Turbulent - Heat transfer 6. WHOI Ref 51-40 7. WHOI Ref 51-41.

Micrometeorology of the surface layer of the atmosphere. Interim report no. 4, Oct 1, 1948 to Dec 31, 1948, under Contract W28-099-ac-378, by C. W. Thornthwaite. Johns Hopkins University. Laboratory of Climatology, Seabrook, N. J. Dec 1948. 53p photos, drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 113784

1. Micrometeorology 2. Temperature - Measurements - Effect of solar radiation 3. Instruments, Measuring - Temperature - Design 4. Evapotranspiration - Tables 5. Tables, Meteorological.

On the role of averaging time in the study of atmospheric turbulence, by Eiichi Inoue. Texas. Agricultural and Mechanical College. Dept. of Oceanography, College Station, Tex. Apr 1954. 17p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114366

Contract AF 19(604)-997. Scientific report no. 2 Project 85. Reference 54-36T.
1. Atmosphere - Turbulence 2. Similarity - Theory.

On waves of finite amplitude, by Joseph B. Knox. California. University. Dept. of Meteorology, Los Angeles, Calif. n.d. 37p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114371

Scientific report no. 6, Sierra wave project. Contract no. AF 19(122)-263.
1. Flow, Fluid - Compressibility 2. Flow, Fluid - Theory 3. Wave propagation - Compressibility effects 4. Wave propagation - Theory 5. Models, Meteorological 6. Adiabatic phenomena.

Sea-level pressure patterns associated with 500-mb contour patterns, by James M. Austin. Massachusetts Institute of Technology. Dept. of Meteorology. Nov 1953. 28p diagrs, maps, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114613

Contract N5ori-07804, Research on atmospheric pressure changes.
1. Cyclones - Forecasting 2. Atmosphere - Pressure - Harmonic analysis 3. MIT Met TR 14.

Study of atmospheric ions in a nonequilibrium system, by C. G. Stergis. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate, Cambridge, Mass. Apr 1954. 35p photo, diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. Limited supply available from Office of Technical Services, U. S. Dept.of Commerce, Washington 25, D. C. $1.00. PB 114606

1. Atmosphere - Ionization - Measurement 2. Ions - Decay - Measurement 3. Ions - Decay - Theory 4. AAF GRD P 26 5. AAF CRC TR 54-13.

Variation of local liquid-water concentration about an ellipsoid of fineness ratio 5 moving in a droplet field, by Robert G. Dorsch and Rinaldo J. Brun. U. S. National Advisory Committee for Aeronautics. Jul 1954. 68p photos, drawings, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114599

Analyses of calculated water-droplet trajectories show that the concentration of liquid water at various points about an ellipsoid of revolution moving through a droplet field varies considerably. Curves of local concentration factor as a function of spatial position are presented in terms of dimensionless parameters. NACA TN 3153.

MINERALS AND MINERAL PRODUCTS

Discussion of paper "Creep behavior of extruded electrolytic magnesium," by C. S. Roberts in Journal of Metals, AIME, Sep 1953, p. 1121-1126, by O. D. Sherby and R. E. Frenkel. California. University. Institute of Engineering Research, Berkeley, Calif. Oct 1953. 13p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114387

Contract N7-onr-295, Task order II, NR-031-048, 31st Technical report.
1. Magnesium - Creep 2. Creep - Theory
3. UC IER ser. 22, Issue 31.

Hydrothermal crystal studies. First annual report for the period Jul 1, 1951 to Jun 30, 1952 under Contract no. DA36-039-sc-5594, by Rustum Roy, R. C. DeVries, D. E. Rase, E. F. Osborn. Pennsylvania State College. Mineral Industries Experiment Station. Jul 1952. 178p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.75, Photocopy $22.75. PB 114207

Three completed investigations are reported on, giving the results of studies on phase equilibrium in the systems $KF-MgF_2$ and $AgF-ZnF_2$, structural relations among the mixed oxides of the trivalent elements, and the crystal structure of $Y(OH)_3$ and $La(OH)_3$. Phase equilibrium data are also reported for the systems $BaO-TiO_2$ and $CaO-TiO_2-SiO_2$. Dept. of the Army project no. 3-99-11-022. Signal Corps project no. 33-142B. Appendix I: Fluoride model systems. V: Model structures and systems for compounds of dielectric interest. The systems $KF-MgF_2$ and $AgF-ZnF_2$, by R. C. DeVries and Rustum Roy. - Appendix II: Structural relations among double oxides of trivalent elements, by M. L. Keith and Rustum Roy. - Appendix III: Concerning the so-called $Y(OH)_3$ type structures and the structure of $La(OH)_3$, by Rustum Roy and H. A. McKinstry.

Kinetics of reactions between oxides in the solid state, by Wayne E. Brownell. Pennsylvania State College. School of Mineral Industries, State College, Pa. Aug 1953. 105p diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $3.00. PB 111433

A quantitative X-ray method was employed for obtaining reaction rates. Simple reactions between two oxides which form only single products were chosen for studies. Oxides covered in part included: MgO, NiO, ZnO, all with Al_2O_3. Effects of certain absorbed metallic ions as: trivalent Ga, monovalent Li, and Pb ions were also considered using Al_2O_3 for the base. Explanations are offered

for much of the observed phenomena. Contract N6-onr 269, Task order 8, NR 032-264, 265. Thesis of W. E. Brownell. ONR TR 54.

Mechanical-property tests on ceramic bodies. Second annual report, 18 Nov 1950-22 Mar 1952, under Contract no. AF 33(038)-8682, by W. H. Duckworth, A. D. Schwope, O. K. Salmassy, R. L. Carlson, H. Z. Schofield. Battelle Memorial Institute, Columbus, Ohio. Mar 1952. 87p photos, drawings, diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 111416

A critical survey was made of the significant theories of strength, for guidance in developing relationships among the strength properties of ceramics. For 1st annual report see AAF TR 6512 (PB 108095). AAF WADC TR 52-67.

Results of kinematographic investigation of the fracture process in glass, by H. Schardin, translated by W. Goldsmith. U. S. Naval Ordnance Test Station, Inyokern, Calif. Apr 1953. 152p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.25, Photocopy $20.25. PB 114480

In the first part of the following work, the fracture process is photographically examined for the case of impact against a plate by means of photo-elastic and Schlieren-optical methods. In the next chapter follows a systematic analysis of all elastic dilatation processes which act on the plate, as well as a comparison with experimental results. Translated from Zeitschrift für Glaskunde Glastechnische Berichte (volume not given). NOTS TM 968.

Rheology of non-aqueous suspensions, by P. J. Rigden. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England. 1954. 58p photos, drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 114162

S. O. code no. 47-110-28.
1. Bituminous mixtures - Properties - Gt. Brit.
2. Bitumen-tar mixtures - Properties - Gt. Brit.
3. Suspensions, Non-aqueous - Rheology - Gt. Brit.
4. Road materials - Mixing - Gt. Brit. 5. DSIR RR TP 28.

Study on magnetic ceramics, by George Economos. Massachusetts Institute of Technology. Laboratory for Insulation Research. May 1954. 60p photos, drawing, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114394

Magnetite, manganese ferrite, and magnesium ferrite together with thirteen compositions within the system Fe_2O_3-MgO-MnO were investigated. A carbonate decomposition method of obtaining a well-dispersed oxide mix of high reactivity was used. The ferrites were also prepared and fired in various controlled atmospheres. Magnesium ferrite and one complex composition (approximate mole percent: 30 Fe_2O_3: 35 MgO: 35 MnO) with a rectangular hysteresis loop characteristic were investigated in detail under a variety of firing conditions. Contracts N5-ori-07801, N5ori-07858, AF 19(604)-458. MIT LIR TR 78.

ORDNANCE AND ACCESSORIES

Method for measuring high-intensity transient stresses in impulsively loaded bodies, by John S. Rinehart and John Pearson. U. S. Naval Ordnance Test Station, Inyokern, Calif. Oct 1953. 27p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114476

A method is described which enables quantitative determinations to be made of either particle velocity within the transient wave and, hence, the stress magnitude, or of velocity of propagation of the wave. Numerical data are presented which establish the validity of the scheme. The simplicity of the method suggests that it may find extensive application in impulsive loading investigations. NAVORD 2063. NOTS 759.

Underwater explosion research, a compendium of British and American reports. U. S. Office of Naval Research. Available for loan from the Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C.

Vol. II: The gas globe. 1950. 782p photos, drawings, diagrs, graphs, tables PB 114314

Contents: Summary papers: Report on the theoretical shape of the pressure-time curve and on the growth of the gas-bubble, by S. Butterworth. Aug 1923. - Underwater explosions. Time interval between successive explosions, by H. F. Willis. Feb 1941. - Theory of the pulsations of the gas bubble produced by underwater explosion, by Conyers Herring. 1949. - Theory of pulsations: Vertical motion of a spherical bubble and the pressure surrounding it, by G. I. Taylor. Aug 1942. - On the changing form of a nearly spherical submarine bubble, by W. G. Penney and A. T. Price. Oct 1942. - Behavior of an underwater explosion bubble, by A. R. Bryant (Approximations based on the theory of Prof. G. I. Taylor) Dec 1942. - Radial motion of water surrounding a sphere of gas in relation to pressure waves, by E. H. Kennard. Sep 1943. - Motion and shape of the hollow produced by an explosion in a liquid, by G. I. Taylor and R. M. Davies. Feb 1943. - Studies on the gas bubble resulting from underwater explosions: On the best location of a mine near the sea bed, by M. Shiffman and B. Friedman. May 1944. - Behaviour of an underwater explosion bubble. Further approximations, by A. R. Bryant. Mar 1945. - Theory of

underwater explosion bubbles, by B. Friedman. Sep 1947. - Theory of migration: Migration of underwater gas globes due to gravity and neighboring surfaces, by E. H. Kennard. Dec 1943. - Rate of rise of large volumes of gas in water, by G. I. Taylor and R. M. Davies. Jun 1944. - Simplified theory of the effect of surfaces on the motion of an explosion bubble, by A. R. Bryant. Oct 1944. - Rate of rise of large volumes of gas in water, by H. N. V. Temperley and Ll. G. Chambers. Jan 1945. - Attraction of an underwater explosion bubble to a rigid disc, by A. R. Bryant. Feb 1945. - Effect of an adjacent deforming target upon the bubble due to a submarine explosion, by Ll. G. Chambers. Nov 1946. - Pressure pulses: Pressures produced by explosions underwater of small charges near a rigid bottom, by G. Charlesworth. Dec 1943. - Secondary pressure pulses due to gas globe oscillation in underwater explosions. I: Experimental data, by A. B. Arons, J. B. Slifko, and A. Carter (Reprinted from Journal of the Acoustical Society of America, vol. 20, no. 3, p. 271-276, May 1948). - II: Selection of adiabatic parameters in the theory of oscillation, by A. B. Arons (Reprinted from Journal of the Acoustical Society of America, vol. 20, no. 3, p. 277-282, May 1948). - Theoretical shape of the pressure pulse produced by an underwater explosion bubble, by A. R. Bryant and Ll. G. Chambers. 1950. - Experimental techniques and measurements: Oscillation of the gas bubble formed by a detonator exploding underwater: Detailed comparison of theory with experiment, by H. N. V. Temperley. Mar 1944. - Photographic measurements of the size, shape and movement of the bubble produced by 1-oz. charges of Polar Ammon gelignite detonated underwater at a depth of 3 feet, by A. R. Bryant. Jun 1944. - Technique for multiflash photography of underwater explosion phenomena, by A. R. Bryant and K. J. Bobin. Aug 1945. - Photographic measurements of the attraction of an underwater explosion bubble to a box model target, by A. R. Bryant. Apr 1946. - Measurement of bubble pulse phenomena. III: Radius and period studies, by E. Swift, Jr. and J. C. Decius. Sep 1947. - Appendix I. Empirical radius-time curve for oscillating gas bubbles in free water, by M. Arsove. - Surface phenomena: Domes and plumes: Analysis of the spray dome, by G. W. Walker. 1919. - Method of determining the depth of underwater explosions, by R. A. Shaw. Dec 1941. - Further investigation into the dome analysis method of determining the depth of underwater explosions, by R. A. Shaw. Apr 1942. - Relation between the appearance of the plumes and the gas globe behavior in underwater explosions, by G. K. Hartmann. 1947. - Determination of peak pressure of an underwater explosion from a study of the initial done velocity, by D. A. Wilson, B. A. Cotter and R. S. Price. May 1947. - Surface phenomena: Gravity waves: Gravity waves produced by surface and underwater explosions, by W. G. Penney. Mar 1945. - Surface waves produced by firing underwater 32-lb. charge of Polar Ammon gelignite at various depths, by G. Charlesworth. Feb 1945. - Surface waves produced by underwater explosions. Comparison of the theory of W. G. Penney with experimental results for a 32-lb. charge, by A.R. Bryant. Sep 1945. - Surface waves from an underwater explosion, by J. G. Kirkwood and R. I. Seeger. May 1947.

Vol. III: The damage process. 1950. 672p photos, drawings, diagrs, graphs, tables
PB 114315

Contents: Summary papers: Damage to ship's plates by underwater explosions, by S. Butterworth. Jul 1924. - Effect of a pressure wave on a plate or diaphragm, by E. H. Kennard. Mar 1944. - Theory of structures: Distortion under pressure of a diaphragm which is clamped along its edge and stressed beyond the elastic limit, by G. I. Taylor. Sep 1942. - Note on an approximate method for the solution of dynamical problems, by E. N. Fox. Sep 1943. - Plastic deformation of and absorption of energy by thin circular plates under normal loading, by A. N. Gleyzal. May 1944. - Method for determining the energy absorption of thin steel diaphragms under hydrostatic pressure, by M. A. Greenfield. May 1944. - Dimensional analysis: An approach from transformation theory and a criterion for scaling model experiments, by J. C. Decius (Reprinted from Journal of the Franklin Institute, vol. 245, no. 5, p. 379-387, May 1948. Contribution no. 393 from Woods Hole Oceanographic Institution). - Theory of the dynamic plastic deformation of a thin diaphragm, by G. E. Hudson. 1950. (Revision and extension of Taylor Model Basin Report R-254, part 18. Jun 1944). - Theory of energy transfer: Note on the motion of a finite plate due to an underwater explosion, by S. Butterworth. Aug 1942. - Bodily motion of a sphere subjected to the pressure pulse from an underwater explosion, by E. N. Fox. Feb 1943. - Summary of formulae relevant to reflection of explosion pulses from a piston in an infinite fixed wall, by E. N. Fox. Mar 1943. - Explosive load on underwater structures as modified by bulk cavitation, by E. H. Kennard. May 1943. - Theoretical investigation of cavitation phenomena occurring when an underwater pressure pulse is incident on a yielding surface: I-III, by H. N. V. Temperley. Aug 1944-Apr 1945. - Diffraction effects in bubble damage to box model plates energy considerations, by G. Charlesworth. Sep 1945. - Theory of plastic deformation of thin plates by underwater explosions, by J. M. Richardson and J. G. Kirkwood. Mar 1950. - Buckling instability of thin cylindrical shells, by J. M. Richardson and J. G. Kirkwood. Feb 1950. - Experimental techniques and measurements: Time-displacement studies of diaphragms deformed by explosive loading, by G. E. Hudson and C. T. Johnson. May 1944. - Improved technique for high speed photography, by D. A. Senior and C. O. J. Grove-Palmer. Jan 1950. - Idealized structures: Preliminary static test of a box model target plate, by E. N. Fox. May 1943. - Aanalysis of pull-in at edge fixings in box model trials, by E. N. Fox. Sep 1945. - Diaphragm gauge studies of underwater explosions, by P. M. Fye and J. E. Eldridge. Mar 1951 (Based on part of OSRD 6248). - Theoretical analysis of the dishing of six inch diameter

copper diaphragm gauges by underwater explosions, by E. N. Fox and W. T. Rollo. Mar 1947. - Experiments on the plastic failure of cylindrical shells, by A. J. S. Pippard and L. Chitty (Reprinted from "The civil engineer in war", vol. III, p. 2-29, 1948). - Historical note on the copper diaphragm gauge, by J. H. Powell. Mar 1950.

Underwater trajectories of fourteen full-scale unpowered torpedo models with ogive, spherogive, plate-ogive, and modified cone heads, by John G. Waugh. U. S. Naval Ordnance Test Station, Inyokern, Calif. Feb 1953. 97p photo, map, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photocopy $12.75. PB 114580

1. Trajectories, Underwater 2. Ballistics, Underwater - Velocity 3. Ballistics, Torpedo - Mathematical analysis 4. Torpedoes - Warheads - Shape - Effect on pitch 5. NAVORD 2012 6. NOTS 644.

PACKING AND PACKAGING

Selected industrial films: Packing and packaging, a list and dexcription of films available to business from industrial, commercial, and government sources. U. S. Office of Technical Services. Jun 1954. 6p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111378

1. Motion pictures, Educational 2. Packing - Motion pictures - Bibliography 3. Packaging - Motion pictures - Bibliography 4. OTS SIF 10.

PERSONNEL APTITUDE TESTING

Analysis of reading difficulty of selected Navy materials, by Nicholas A. Fattu and Lloyd S. Standlee. Indiana. University. Institute of Educational Research. Personnel Analysis Division, Lafayette, Ind. Mar 1954. 60p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114457

Contract Nonr-908(01). PA 3018.3.1.
1. Reading - Ability tests 2. Personnel, Naval - Literacy rating scales 3. Personnel, Naval - Selection and training 4. Personnel, Naval - Reading requirements 5. NAVPERS TB 54-3.

Construction of comprehensive achievement examinations for Navy officer candidate programs, prepared under auspices of Bureau of Naval Personnel, Personnel Analysis Division, Training Research Branch, by John B. Carroll and Benjamin Schohan. American Institute for Research, Inc., Pittsburgh, Pa. Nov 1953. 139p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.75, Photocopy $17.75. PB 114612

Project no. NR 154-138.
1. Tests, Officer qualification 2. Personnel, Naval - Tests 3. Personnel, Naval - Selection and training.

Evaluation of two kinescopes, by Robert E. Stover and Daniel G. Tear. Pennsylvania State College, State College, Pa. Oct 1953. 23p diagrs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114191

Instructional film research program. Contract N6onr-269. SPECDEVCEN project 20-E-4.
1. Training films, Audio-visual - Evaluation 2. Kinescopes - Evaluation 3. Instructional film research program 4. SDC TR 269-7-38.

Measured vocational interests of officers assigned to positions in the personnel and comptroller fields, by Donald G. Patterson, Paul G. Jensen, and George W. England. Minnesota. University. Industrial Relations Center. Jan 1954. 32p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114347

Contract no. AF 18(600)-337. HRRI Project: "Vocational interests of Air Force Officers"
1. Personality tests 2. Vocational tests 3. Strong vocational interest blank (SVIB) 4. AAF HRRI TRR 21.

PHOTOGRAPHIC AND OPTICAL GOODS

Spectra energy distribution in the light emitted by collision of shock waves, by Michel-Levy, Muraour, Vassy, translated by E. B. Mayfield and William C. White. U. S. Naval Ordnance Test Station, Inyokern, Calif. Aug 1952. 29p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114479

The energy distribution has been determined in the spectra obtained when shock waves are collided in an atmosphere of various gases: argon, helium, oxygen, etc. The problem consists of comparing, with the same spectrograph, the lumination emitted with that of a source of known energy distribution. Translated from Revue d'optique, vol. 20, p. 149 (1941). NOTS TM 933.

Time-resolved spectroscopy of ultra-speed pellet luminosity, by William A. Allen and Earle B. Mayfield. U. S. Naval Ordnance Test Station, Inyokern, Calif. Aug 1952. 18p photos, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114478

Improved optical instrumentation has resulted in high time-resolution spectrograms of the lumino-

sity associated with ultra-speed aluminum pellets. These data indicate that the light is emitted in two phases: (1) The ballistic, or air shock, characterized by atomic metal lines and a strong continuum. (2) A10 bands that appear about 150 μ sec after the metal is ablated from the pellet. NOTS TM 914.

PHYSICS

General

Application of Wiener-Hopf technique to certain diffraction problems, by V. S. Ament. U. S. Naval Research Laboratory. May 1954. 25p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114440

The Introduction contains a more general statement of this idea, and Section I, an application to the well-known problem of straight-edge diffraction. In Section II, a rough-surface reflection problem is formulated. Section III deals with some results valid when the half-planes are perpendicular to the reflecting plane. The problem considered in Section IV is that of diffraction by a conducting half-plane which lies in the plane interface between two different media. NRL R 4334.

Conversion table of tangents or cotangents to sines and cosines of three decimals, by George E. Reynolds. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Electronics Research Directorate. Antenna Laboratory, Cambridge, Mass. Aug 1953. 25p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114438

By the evaluation of tangents and cotangents as functions of sines and cosines at those values where there is a change in the third place of the latter functions, an economical table has been formed which permits immediate determination of three-decimal sines and cosines from given tangents or cotangents without interpolation or roundoff. AAF CRC TR 53-29. AAF CRL E 4092.

Force at a point in the interior of a semi-infinite solid, by R. D. Mindlin. Columbia University. Dept. of Civil Engineering. May 1953. 12p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114525

Contract Nonr-266(09), Project NR-064-388, Technical report no. 8.
1. Elasticity - Theory 2. Papkovitch functions (Equilibrium) 3. Green's function 4. Solids - Elastic properties.

Forced motions of elastic rods, by G. Herrmann. Columbia University. Dept. of Civil Engineering. Feb 1953. 16p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114518

Contract Nonr-266(09), Project NR-061-388. Technical report no. 4. CU-5-53-ONR-266(09)-CE.
1. Rods, Elastic - Vibrations 2. Elasticity - Theory 3. Equations of motion 4. Vibration - Theory.

Free-streamline analyses of transition flow and jet deflection, edited by John S. McNown and Chia-Shun Yih. Iowa State University. Institute of Hydraulic Research, Iowa City, Iowa. 1953. 86p diagrs, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.00, Photocopy $11.50. PB 114418

State University of Iowa. Studies in engineering Bulletin 35. No. 427. Contents: Elements of free-streamline theory, by John S. McNown. - Transition curves of constant pressure: I. Streamlined struts, by R. Gerber and John S. McNown. - II. Inlets, by D. W. Appel and E. M. Laursen. - Deflection of jets: I. Symmetrically placed V-shaped obstacle, by T. T. Siao and P. G. Hubbard. - II. Symmetrically placed U-shaped obstacle, by Turgut Sarpkaya. - III. Unsymmetrically placed semi-infinite plate, by Simon Ince and Clark DeHaven. - Manifold efflux, by Arthur Toch and Robert W. Moorman. - Head losses in miter bends, by Harry H. Ambrose. - References.

Intensity measurements of molecular spectra. II: Experimental study of band intensities in the first positive system of N_2, by R. G. Turner and R. W. Nicholls. University of Western Ontario. Dept. of Physics. Apr 1954. 28p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114190

Scientific report no. 14. Contract no. AF19(122)-470. For Part I see PB 108119.
1. Molecules - Spectroanalysis - Canada
2. Spectra - Intensity - Measurement - Canada
3. Spectroscopy, Nuclear - Canada 4. Nitrogen - Molecular electric moments - Canada.

Interior problems of the theory of Schlicht functions, by G. M. Golusin, translated by T. C. Doyle, A. C. Schaeffer and D. C. Spencer. Apr 1947. 142p Available from Library of Congress, Publication Board Project, Washington 25, D.C. Microfilm $6.00, Photocopy $19.00. PB 114569

Translated from Uspekhi Matem. Nauk 6, p. 26-89 (1939) under Contract N6ori-154, T. O. III at Stanford University.
1. Schlicht functions - Russia 2. Mapping, Conformal - Russia 3. Mathematical equations and solutions - Russia 4. NAVEXOS P-572.

Investigation of solid friction at very low sliding speeds, by Frank J. Heymann. May 1953. 84p photos, drawings, diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.00, Photocopy $11.50. PB 114598

A friction apparatus has been constructed which uses an indium creep mechanism to obtain sliding speeds of the order of 10^{-5} cm/sec or lower, and measures the friction between two specimens of any desired material with a strain-gauge system stiff enough to prevent relaxation oscillations. The results show in general a negative slope of the friction-velocity curve, with the coefficient of friction generally between 0.5 and 0.9 for clean surfaces, and between 0.2 and 0.4 for surfaces lubricated with fatty acids. No reproducible friction-velocity relationship for any material combination was obtained, and this is explained as a result of the fact that under the conditions of these tests the friction is dependent not only upon the instantaneous sliding speed but also on the past history of the sliding motion. Thesis - Massachusetts Institute of Technology. D. I. C. project 3-6780. Contract N5ori-07845, NR 065-335.

Kinzokumen to futtosui tono kan no dendatsunetsu no gokudaine narabini gokushone kettei no jikken (Maximum and minimum values of heat Q transmitted from metal surface to boiling water under atmospheric pressure), by Shiro Nukiyama. Translated by H. Miyamoto, edited by M. Inouye, B. K. Omura, and William A. Barden. Feb 1947. 26p graphs (Text in Japanese and English) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 113837

The heat Q transmitted from metallic surface to boiling water increases gradually with the increase of the temperature difference ΔT, but when it reaches a certain point Q tends to decrease if ΔT is increased beyond this point. This point is of the maximum value of transmitted heat Q mentioned in the title and the existence of such a point is proved experimentally in this report. Japanese text will not reproduce well. AAF T-2 T/713.

Mixing of fluid streams. Summary technical report, Part I: Transport of momentum, mass, and heat in turbulent jets, by Lloyd G. Alexander, Thomas Baron, Edward W. Comings. Illinois. Engineering Experiment Station, Urbana, Ill. Sep 1950. 173p photos, drawings, diagrs, graphs (part fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.75, Photocopy $22.75. PB 114419

Contract N6-ori-71, Task order no. XI.
1. Flow, Jet mixing - Theory 2. Flow, Turbulent - Theory 3. Flow, Turbulent - Measurement 4. Flow, Jet mixing - Measurement 5. Flow, Jet mixing - Measuring equipment 6. Flow, Jet mixing - Heat transfer 7. Flow, Jet mixing - Velocity distribution 8. ILU EES TR 8.

Mixing of high-velocity air jets, by T. Baron and E. H. Bollinger. Illinois. Engineering Experiment Station, Urbana, Ill. Mar 1952. 105p photo, diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photocopy $14.00. PB 114645

Contract no. DA-18-064-CML-445. Technical report no. CML-3. Investigation was begun in 1946 under Contract N6-ori-71, Task XI.
1. Flow, Jet mixing - Theory 2. Momentum - Theory 3. Reichardt's theory 4. ILU EES TR CML-3.

Model study of air coupled surface waves, by Frank Press, Jack Oliver, Norman Ricker, C. S. Clay. Columbia University. Lamont Geological Observatory, Palisades, N. Y. Jun 1954. 20p diagrs, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114365

Flexural waves generated in a thin plate by a spark source are used to investigate properties of air-coupled surface waves. Both ground shots and air shots are simulated in the model. Effects of source elevation, fetch of air pulse, cancellation by destructive interference are studied. Contract AF 19(122)-441. CUN LGO TRS 37.

Multi-factor experimental designs, by G. E. P. Box and J. S. Hunter. North Carolina State College. Institute of Statistics, Raleigh, N. C. Jan 1954. 60p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114566

Mimeo. series no. 2. Contract no. DA 36-034-ORD-1177 (RD). Dept. of the Army project no. 599-01-004. Ordnance project no. TB 2-0001(832). Technical report no. 6.
1. Mathematical equations and solutions 2. Matrix theory 3. Factor analysis.

Nomographs for computation of radiation heat supply, by R. W. Gerdel, M. Diamond and K. J. Walsh. U. S. Army. Corps of Engineers. Snow, Ice and Permafrost Research Establishment, Wilmette, Ind. Feb 1954. 8p graphs (1 fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114459

1. Solar radiation - Measurement 2. Solar radiation - Measuring equipment 3. Heat, Radiant - Computation 4. Nomograms 5. SIPRE RP 8.

On some two- and three-dimensional problems in heat conduction, by Arnold N. Lowan, Naval Ordnance Laboratory and Yeshiva University. U. S. Naval Ordnance Laboratory. Aug 1951. 48p

Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114087

The accompanying article deals with the two- and three-dimensional problems in heat conduction in domains bounded by one, two or three of the planes $x = 0$, $y = 0$, when either the temperature or the temperature gradient is prescribed on the entire boundary or portions thereof or when radiation into a medium at given temperature takes place on the entire boundary or portions thereof. The solutions of the various problems treated here are obtained by the Laplace Transformation methods. NAVORD 1837.

On the singularity at a concentrated load applied to a curved surface, by E. Sternberg and R. A. Eubanks. Illinois Institute of Technology. Dept. of Mechanics. Nov 1953. 22p diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114532

This paper deals with the singularity at the point of application of a concentrated load acting perpendicular to a curved boundary of an elastic body. Contract N7onr-32906, Project no. NR-035-302.

Physical constants and conversion factors. 4th edition. U. S. Office of Naval Research. Sep 1953. 6p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.25. PB 111403

1. Conversion coefficients - Tables 2. Alphabets, Greek.

Propagation, reflection and generation of temperature waves: A transmission line analogy and the reflection at a change of cross section in circular cylindrical rods, by Paul M. Marcus. Carnegie Institute of Technology. Dept. of Physics. Low Temperature Group. Aug 1953. 121p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.25, Photocopy $16.50. PB 114224

Technical report no. 10. Contract N6ori-47, Task order 3, Project no. NR016-403.
1. Thermal conductivity, Nonlinear - Theory 2. Cylinders, Circular - Heat transference 3. Cylinders, Circular - Mathematical analysis 4. Cylinders, Circular - Reflective effects 5. Cylinders, Circular - Temperature 6. Low temperature research 7. Metals - Temperature - Measurements 8. Metals - Low temperature.

Pure bending of an incomplete torus. Illinois Institute of Technology. Dept. of Mechanics. Jan 1952. 13p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114526

Contract N7onr-32906.
1. Bending theory 2. Torus (Mathematics).

Quarterly progress report, July-Sep 1953, by R. H. Bolt, R. D. Fay, L. L. Beranek. Massachusetts Institute of Technology. Acoustics Laboratory. Sep 1953. 35p diagrs, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114498

1. Acoustic research.

Re-entrant jet theory and cavity drag for symmetric wedges, by E. Leonard Arnoff. U. S. Naval Ordnance Test Station, Inyokern, Calif. Mar 1951. 33p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 113822

This report undertakes to apply the re-entrant jet theory in the determination of cavity drag for symmetrical wedges, and compares the results with other information found in the literature. NAVORD 1298. NOTS 368.

Report for the year 1953. Gt. Brit. National Physical Laboratory. 1954. 87p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 114657

S. O. code no. 48-100-0-53.
1. Laboratories, Physics - Gt. Brit.

Schematic theory of flame propagation, by Taro Kihara and Joseph O. Hirschfelder. Wisconsin. University. Naval Research Laboratory, Dept. of Chemistry. Feb 1953. 19p graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114619

The propagation velocity of one-dimensional steady flames sustained by a unimolecular or a bimolecular reaction has been treated theoretically by means of an idealized model of the reaction rate and under some simplifying assumptions. Contract N Ord 9938, Task WIS-I-D. CM-766.

Some investigations of molecular spectra at decimeter wavelengths, by Yardley Beers, Samuel Weisbaum, Gabriel Herrmann, Fred Sterzer. New York University. College of Engineering. Research Division. Oct 1953. 73p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photocopy $10.25. PB 114502

Contract no. Nonr 621(00), Final report. Report no. 195.2.
1. Gases - Absorption 2. Spectroscopy, Molecular 3. Generators, Square-wave - Design 4. Spectrometers - Design.

Studies on a non-isothermal jet discharging into a duct, by A. Kivnick and E. D. Henze. Illinois.

Engineering Experiment Station, Urbana, Ill. Dec 1951. 35p photos, drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114644

Contract no. DA-18-064-CML-445. Technical report CML-1. Based on a thesis by Edward D. Henze.
1. Flow, Jet mixing 2. Gases - Mixing - Theory 3. Reichardt's theory 4. ILU EES TR CML-1.

Studies of thermal conductivity of liquids. Part IV: A literature survey of ultrasonic velocities in liquids and solutions, by Byron C. Sakiadis and Jesse Coates. Louisiana. Engineering Experiment Station, Baton Rouge, La. 1954. 64p tables Available from Engineering Experiment Station, Louisiana State University, Baton Rouge 3, La. $1.00. PB 114393

Research conducted under National Science Foundation research grant G-558. For Parts I-II see PB 107539, PB 108917.
1. Liquids - Thermal conductivity - Bibliography 2. Sound - Propagation in liquids 3. Sound, High frequency - Research 4. L EES B 46.

Transport of momentum and energy in a ducted jet. Illinois. Engineering Experiment Station, Urbana, Ill. Under Contract N6-ori-71, T. O. XI. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

II: Theoretical study of turbulent transport of momentum, energy and matter in ducted coaxial streams, by Lloyd G. Alexander. n.d. 20p tables Microfilm $2.00, Photocopy $2.75. PB 114642

1. Flow, Jet mixing - Theory 2. Flow, Turbulent - Theory 3. Momentum - Theory.

III: Correlation of profiles of total momentum and energy flux in a non-isothermal jet discharging into a duct, by Lloyd G. Alexander and Arnold Kivnick. n.d. 21p graphs, tables Microfilm $2.25, Photocopy $4.00. PB 114643

1. Flow, Jet mixing - Theory 2. Flow, Jet mixing - Heat transfer 3. Flow, Jet mixing - Velocity distribution.

Thermodynamic properties of air (gamma study). Minnesota. University. Institute of Technology. Dept. of Aeronautical Engineering. Rosemount Research Laboratories, Minneapolis, Minn. Under Contract N6onr 246, Task VII. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Second progress report, by Frank D. Werner. Aug 1948. 25p photos, drawings Microfilm $2.25, Photocopy $4.00. PB 108551

Research report 28.
1. Air - Thermodynamic properties 2. Sound - Speed - Measuring equipment 3. Air - Compressibility - Measuring equipment 4. Interferometers - Design 5. Gamma rays - Energy measurements 6. Gages, Piston - Design 7. Temperature - Measurements - Meters.

Technical report, by J. W. Braithwaite and F. D. Werner. Apr 1950. 29p photos, diagr, graphs, tables Microfilm $2.25, Photocopy $4.00. PB 113390

The tests reported are concerned with the variation of sonic velocity in air as a function of the frequency of the sound wave and the pressure of the air with the temperature constant. The overall importance of this study has been considerably enhanced by the discovery of the rotational dispersion region for air. The first known reported data on this phenomenon are presented in this report. Research Report 58.

Use of tensor notation to develop characteristic equations of supersonic flow, by C. N. H. Lock and R. C. Tomlinson. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1949. 18p diagrs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 114405

Cover date is 1954. S. O. code no. 23-2632.
1. Tensor analysis - Gt. Brit. 2. Vector analysis - Gt. Brit. 3. Fluids, Non-viscous - Motion - Mathematical analysis - Gt. Brit. 4. Flow, Supersonic - Theory - Gt. Brit. 5. Flow, Two dimensional - Theory - Gt. Brit. 6. Mathematical equations and solutions - Gt. Brit. 7. ARC RM 2632.

Viscosity of rarefied gases, using the rotating cylinder technique, by A. R. Kuhlthau. New Hampshire. University. Physics Dept. Aug 1951. 32p drawings, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114424

Final report under Contract N9-onr-90101.
1. Gases, Rarefied - Viscosity 2. Gases, Rarefied - Viscosity - Measuring equipment.

Nuclear

Annual report, 3d, under Contract N6ori-144, Task order I, NR 026-021. Franklin Institute. Bartol Research Foundation, Swarthmore, Pa. Sep 1953. 205p drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $7.75, Photocopy $26.50. PB 114253

W. F. G. Swann, Director. Contents: I. Cosmic rays. A. India expedition, by M. A. Pomerantz. - B. Photographic plate exposures, by D. W. Kent, Jr. - C. Ionization spectrum of the primary cosmic radiation at $\gamma = 10^{0}$N, by G. W. McClure. - II. Nuclear physics. A. Large Van de Graaff generator, by C. P. Swann. - B. Radioactivity. 1)

Angular correlation measurements, by F. R. Metzger. - 2) Resonance fluorescence studies, by F. R. Metzger. - 3) Search for anamolous positively-charged particles from P^{32}, by G. W. McClure. - 4) Disintegration of Mo^{99}, by J. Varma and C. E. Mandeville. - C. Phosphorescence studies. Storage of energy in some activated alkali halide phosphors, by C. E. Mandeville and H. O. Albrecht. - D. Concerning counters. Observation of the positive ion flux at the cathode of a G-M counter, by W. C. Porter. - III. Linear accelerator. Report by J. F. Marshall. - IV. Publications. - V. Reprints: On H. Alfven's theory of the effect of magnetic storms on cosmic ray intensity, by W. F. G. Swann. - Radiations from arsenic 77 and germanium 71, by B. L. Saraf, J. Varma, and C. E. Mandeville (From Physical review vol. 91, no. 5, p. 1216-1218, Sep 1, 1953.). - Lower limit for the lifetime of the 665-kev excited state of Mo^{97}, by F. R. Metzger and W. B. Todd (From Physical review, vol. 91, no. 5, p. 1286-1287, Sep 1, 1953.) - The "chemical knife", preservation of zone for thirty-six days, by H. O. Albrecht (From Journal of chemical physics, vol. 21, no. 8, p. 1421-1422, Aug 1953). - Storage of energy in silver activated potassium chloride, by C. E. Mandeville and H. O. Albrecht (From Physical review, vol. 91, no. 3, p. 566-567, Aug 1, 1953). - Specific primary ionization of H_2, He, Ne, and A by high energy electrons, by G. W. McClure (From Physical review, vol. 90, no. 5, p. 796-803, Jun 1, 1953). - Phosphorescence of thoria, by C. E. Mandeville and H. O. Albrecht (From Physical review, vol. 90, no. 5, p. 992-993, Jun 1, 1953). - Spin and parity of the 2.3-mev excited state of Te^{124}, by Franz R. Metzger (From Physical review, vol. 90, no. 2, p. 328-329, Apr 15, 1953). - Alpha-particle induced phosphorescence of silver-activated sodium chloride, by C. E. Mandeville and H. O. Albrecht (From Physical review, vol. 90, no. 1, p. 25-28, Apr 1, 1953). - Extending the efficient range of G-M counters, by W. C. Porter (From Nucleonics, vol. 11, no. 3, p. 32-35, Mar 1953). - Gamma radiations from Zr^{95} and Nb^{95}, by C. E. Mandeville, E. Shapiro, R. I. Mendenhall, E. R. Zucker, and G. L. Conklin (From Physical review, vol. 89, no. 3, p. 559-561, Feb 1, 1953). - Radiations from Zr^{97} and Nb^{97}, by C. E. Mandeville, E. Shapiro, R. I. Mendenhall, E. R. Zucker and G. L. Conklin (From Journal of the Franklin Institute, vol. 254, no. 5, p. 381-389, Nov 1952). - Gamma rays from Sn^{125}, by C. E. Mandeville, E. Shapiro, R. I. Mendenhall, E. R. Zucker and G. L. Conklin (From Physical review, vol. 88, no. 3, p. 554-555, Nov 1, 1952).

Handling and dispensing of chemically processed radioactive isotopes, an A. E. R. E. report, by F. Hudswell, G. A. Neathway, B. R. Payne, J. A. Payne, (Mrs.) P. Scargill. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Feb 1954. 24p drawings, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.90. PB 114353

HD.1120. S. O. code no. 70-674-1-63.
1. Radioisotopes - Handling - Gt. Brit. 2. Atomic power - Research - Gt. Brit. 3. AERE I/R 1360.

Photodisintegration thresholds of deuterium and beryllium, by J. C. Noyes, J. E. Van Hoomissen, W. C. Miller, and B. Waldman. University of Notre Dame. Nuclear Physics Laboratory, Notre Dame, Ind. Nov 1953. 45p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114687

The photodisintegration thresholds of deuterium and beryllium have been determined by using the bremsstrahlung produced by monoergic electrons. The energy of the electrons was measured with a cylindrical electrostatic analyzer to an accuracy of 0.1%. Contract N6ori-83, T. O. II, NR 024-022.

Preparation for dispensing of miscellaneous radioisotopes, an A.E.R.E. report, by F. Hudswell, B. J. Miles, B. R. Payne, J. A. Payne, P. Scargill (Mrs.), K. J. Taylor. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Apr 1954. 12p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 114691

HD. 1190. S. O. code no. 70-674-1-67.
1. Radioisotopes - Production - Gt. Brit. 2. Radioisotopes - Handling - Gt. Brit. 3. Atomic power - Research - Gt. Brit. 4. AERE I/R 1386.

Preparation of thin alpha sources by vacuum sublimation, an A.E.R.E. report, by J. Milsted. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Feb 1954. 14p photos, drawings, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 114690

HD. 1141. S. O. code no. 70-674-1-64.
1. Alpha rays - Measurements - Gt. Brit. 2. Alpha rays - Measuring equipment - Gt. Brit. 3. Alpha rays - Spectra - Gt. Brit. 4. Tetraethylene glycol - Uses - Gt. Brit. 5. Platinum - Isotopes - Alpha emission - Gt. Brit. 6. Aluminum - Isotopes - Alpha emission - Gt. Brit. 7. Analyzers, Pulse - Performance - Gt. Brit. 8. Atomic power - Research - Gt. Brit. 9. AERE C/R 1379.

PHYSIOLOGY

Experimental motion sickness in dogs: Functional importance of chemoceptive emetic trigger zone, by S. C. Wang and Herman L. Chinn. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Jun 1954. 9p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.50, Photocopy $1.50. PB 114589

The results indicated that the trigger-zone-ablated dogs showed no vomiting responses after long exposures to swinging motion, while the sham-operated dogs remained sensitive to this motion. It is, therefore, concluded that the emetic trigger zone is important in the mediation of motion sickness. Contract no. AF 33(038)-25899. AAF SAM Proj 21-1208-0012, Report no. 4.

Hormonal influences in learning: The pituitary-adrenal system, anxiety, and avoidance learning, by Mortimer H. Applezweig and George Moeller. Connecticut College. Dept. of Psychology, New London, Conn. Oct 1953. 52p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114378

Research report on Project NR 154-103 and Project NR 154-137 under Contract Nonr 559(01) and Contract 996(01), Sep 1, 1951 to Sep 30, 1953.
1. Hormones, Adrenocorticotropic - Physiological effects 2. Hormones, Pituitary - Physiological effects 3. Learning - Psychological factors 4. Learning - Effect of hormones.

Low temperature physiology. Final report, by M. X. Zarrow. Purdue University. Dept. of Biological Sciences, Lafayette, Ind. Jun 1954. 23p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114668

This report will briefly summarize the results that have been obtained thus far. Rather than attempt to give all the individual data, all the material has been averaged and will be presented in tabular form. Includes Eosinophils of blood during prolonged exposure to cold and chronic administration of cortisone acetate, by M. E. Denison and M. X. Zarrow (Reprinted from Proceedings of the Society for Experimental Biology and Medicine, vol. 85, p. 433-437, 1954).

Periodic status report XXII for period 15 May-15 Nov 1953, under Contract N5ori-76, Project order II, Project NR 142-201. Harvard University. Psycho-Acoustic Laboratory. Nov 1953. 21p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114638

1. Hearing - Physiology 2. Speech - Intelligibility 3. Noise - Physiological effects 4. Psychoacoustics - Research.

Physical environment of the flyer, by Heinz Haber. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. 1954. 185p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $7.00, Photocopy $24.00. PB 114621

1. Atmosphere - Physical properties 2. Atmosphere, Upper - Physical properties 3. Solar radiation - Absorption 4. Flying - Physiological effects.

PSYCHOLOGY

Achievement motivation and fatigue, by Hans Werner Wendt. 1953? 21p diagr, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114223

Contract N7onr-463.
1. Psychology, Applied 2. Fatigue - Research 3. Performance tests.

Consideration of information theory and utility theory as tools for psychometric problems, by Lee J. Cronbach. Illinois. University. College of Education. Bureau of Research and Service. Nov 1953. 68p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.25; Photocopy $9.00. PB 114637

Technical report no. 1 under Contract N6ori-07146.
1. Psychometric tests 2. Communications - Theory 3. Information - Theory.

Experimental analysis of problem-solving behavior, by Howard H. Kendler. New York University. Dept. of Psychology. Nov 1953. 40p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114615

Technical report I under Contract Nonr 187(00), Project NR 150-064.
1. Psychology, Applied.

Human behavior from the transactional point of view. Institute for Associated Research, Hanover, N. H. 1952. 268p photos, drawings, diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $9.25, Photocopy $34.00. PB 114620

Editor: Franklin P. Kilpatrick. Submitted by Hadley Cantril, Project Director. Prepared under Contract Nonr-496(01) for the Neuropsychiatric Branch, Bureau of Medicine and Surgery. Contents: Part I. Chapter 1. Elementary demonstrations of perceptual phenomena, by F. P. Kilpatrick. - Chapter 2. Aniseikonic glasses, by Adelbert Ames, Jr. - Chapter 3. Equivalent configurations and the monocular and binocular distorted rooms, by W. H. Ittelson and F. P. Kilpatrick. - Chapter 4. Perception of movement, by F. P. Kilpatrick and W. H. Ittelson. - Chapter 5. The rotating trapezoid: Description of the visual phenomena, by Adelbert Ames, Jr. - Chapter 6. The rotating trapezoid: Explanation of the visual phenomena, by Adelbert Ames, Jr. - Chapter 7. Statement of theory, by F. P. Kilpatrick. - Part II. Chapter 1. Influence of suggestion on the relationship between stimulus size and perceived distance, by A. H. Hastorf. - Chapter 2. Size as a cue to distance, by W. H. Ittelson. - Chapter 3. Size-distance judgments of human faces, by George Horsley Smith. - Chapter 4. An investigation into the relationship between visual perception and level of personal security, by Philip K. Hastings. - Chapter 5. Assumptions and perception: Three experiments, by F. P. Kilpatrick. - Chapter 6. Accommodation, convergence, and their relation to apparent distance, by W. H. Ittelson and

Adelbert Ames, Jr. - Chapter 7. Size-distance invariance hypothesis, by W. H. Ittelson and F. P. Kilpatrick. - Part III. Psychology and scientific research, by Hadley Cantril, Adelbert Ames, Jr., A. H. Hastorf, W. H. Ittelson. - Chapter 2. Constancies in perceptual theory, by W. H. Ittelson. - Chapter 3. Nature of social perception, by Hadley Cantril. - Chapter 4. Nature of attitude and opinion, by A. H. Hastorf and A. L. Knutson. - Addendum I. Preliminary investigation of certain aspects of perception, including the Honi phenomenon, by Warren J. Wittreich. - Appendix I. Annotated bibliography.

Human engineering in the U. S. Navy, a study by the Working Group in Human Engineering, by Joseph G. Wohl, John A. Nagay, Franklin V. Taylor. U. S. Office of Naval Research. Feb 1953. 25p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114150

1. Psychology, Applied 2. Naval engineering - Psychological aspects 3. Personnel, Naval.

Leadership practices in relation to productivity and morale, by Robert L. Kahn and Daniel Katz. Michigan. University. Institute for Social Research, Ann Arbor, Mich. Dec 1952. 27p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photocopy $4.00. PB 114357

1. Leadership 2. Psychology, Applied.

Measurement of interest patterns. Annual report under Project N6ori-21203, NR 151-248, by Kenneth E. Clark, Helen H. Gee, Dallis Perry, Diane Albitz and Joyce S. Smith. Minnesota. University. Dept. of Psychology, Minneapolis, Minn. Nov 1953. 89p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.00, Photocopy $11.50. PB 114636

1. Navy Vocational Interest Inventory 2. Strong Vocational Interest Blank 3. Psychological tests.

Study of work satisfactions as a function of the discrepancy between inferred aspirations and achievements, by Floyd C. Mann. Michigan. University. Survey Research Center, Ann Arbor, Mich. n.d. 11p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114358

The data used in this study were collected as a part of a carefully constructed comprehensive paper-and-pencil questionnaire. Detailed attitudinal and personal data were obtained from nearly 4800 men working at blue collar jobs, 1800 while collar men and 1200 white collar women. The single questions used in this particular analysis were known to be key items from different attitudinal dimensions. May not reproduce well.

STRUCTURAL ENGINEERING

Aseimic design of elastic structures founded on firm ground, by L. E. Goodman, E. Rosenblueth and N. M. Newmark. Illinois. University. Dept. of Civil Engineering, Urbana, Ill. Jun 1952. 51p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photocopy $7.75. PB 114516

A rational basis for the design of earthquake-resistant structures is developed. The theory is based on inferences drawn from accelerograms of strong-motion earthquakes and on the theory of probability. While the general method of approach is capable of wider extension, conclusions of the present study are limited to structures whose behavior is elastic and which are founded on ground of stiffness comparable to that of sites at which reliable earthquake accelerograms have been recorded. Contract N6onr-71, Task order VI, Project NR-064-183. Based on thesis University of Illinois by E. Rosenblueth. ILU CES SR 26.

Dynamic criteria of buckling, by N. J. Hoff. Polytechnic Institute of Brooklyn. Dept. of Aeronautical Engineering and Applied Mechanics. Jul 1949. 19p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114512

Technical report no.3 under Contract no. N6onr-26308. Reprinted from Research (Special supplementary volume, Colston Papers) "Engineering structures". Pages are numbered 121-139.
1. Buckling - Theory 2. Stability, Structural - Theory 3. PIB AL 168.

Fastening of gypsum wallboard with threaded nails, by E. George Stern. Virginia Polytechnic Institute. Wood Research Laboratory, Blacksburg, Va. Jun 1954. 8p photo, graph, tables Available from Virginia Polytechnic Institute, Wood Research Laboratory, Blacksburg, Va. PB 114484

Bulletin no. 15.
1. Wallboard - Fastening 2. Nails, Threaded - Tests 3. VPI WRL B 15.

Foamed-in-place sandwich construction, metal faced, by E. Duplaga and B. D. Raffel. Goodyear Aircraft Corporation, Akron, Ohio. Jul 1953. 23p photos, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111417

Significant features discussed are the treatment of the aluminum skins along with the application of various coatings to achieve improved metal-to-foam bond. Contract no. AF 33(038)-22258. AAF WADC TR 53-72.

Free vibrations of a pin-ended column with constant distance between pin ends, by David Burgreen. Polytechnic Institute of Brooklyn. Dept. of Aeronautical Engineering and Applied Mechanics. Feb 1950. 18p photos, graphs, diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photocopy $2.75. PB 114511

In this paper a study is made of the free vibrations of a pin-ended column whose ends are attached to points fixed in space. Technical report no. 2. Contract no. N6onr-26308. PIB AL 166.

Gasketless joint for application to high-temperature, high-pressure water systems, by G. M. Dinnick. U. S. Naval Research Laboratory. Mar 1954. 5p drawings, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111363

A simple, relatively inexpensive means has been devised for assembling high-pressure, high-temperature piping without gaskets. The satisfactory performance of the joint has been demonstrated in a number of tests. The joint should offer advantages of size, cost, ease of assembly and disassembly, and freedom from contaminating and corroding materials for joining high-pressure, high-temperature piping. The principle should be capable of extension to materials other than the stainless steel for which it was designed. NRL R 4336.

Impact on elastic beams, by A. Cemal Eringen. Illinois Institute of Technology. Dept. of Mechanics. May 1952. 129p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.25, Photocopy $16.50. PB 114505

In this report a study is made of the problem of central transverse impact on simply-supported beams. The contact force functions obtained by different methods are compared with the results of previous writers. Beam deflection, bending stress, and bending strain are computed and plotted for two different examples. Various curves are given to simplify and shorten the beam impact problems. Contract N7onr-32909. Technical report no. 1.

Investigation of the creep lifetime of 75S-T6 aluminum-alloy columns, by Eldon E. Mathauser and William A. Brooks, Jr. U. S. National Advisory Committee for Aeronautics. Jul 1954. 28p photos, drawings, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114586

The results of short-time elevated-temperature creep tests of 75S-T6 aluminum-alloy columns are presented and examined with the objective of obtaining procedures for predicting column lifetime. Semi-empirical lifetime curves are obtained with the aid of a previously published column creep theory and are used for deriving column curves. A study is made of the effects of variations of stress and out-of-straightness on column lifetime. Small variations in out-of-straightness have been found to be of little practical significance; whereas, small stress variations change the column lifetime considerably. Plots that do not explicitly include out-of-straightness are presented and may be satisfactory for predicting column lifetime for design purposes. NACA TN 3204.

Method for calculating the natural frequencies of continuous beams, by A. S. Veletsos and N. M. Newmark. Illinois. University. Dept. of Civil Engineering, Urbana, Ill. Jan 1953. 36p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114535

This report describes a method for calculating the undamped natural frequencies of flexural vibration of elastic beams which are continuous over non-deflecting supports. Numerical values of the quantities of "dynamic flexural stiffness" and of "the product of dynamic flexural stiffness and dynamic flexural carry-over factor" which are necessary in the analysis by this method are tabulated in the Appendix. The method is illustrated by a numerical example. Contract N6ori-71, Task order VI, Project NR-064-183. ILU CES SR 38.

Note on large plastic deformations of beams under transverse impact, by T. H. H. Pian. Massachusetts Institute of Technology. Dept. of Aeronautical Engineering. May 1952. 38p diagrs, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114539

It is shown that in the case of a simple square-shape impulsive load, the problem, which involves a non-linear differential equation, can be solved in closed form. The time histories of the acceleration, the velocity, and hence, the displacement are then evaluated. Results are presented in terms of the permanent deformation caused by the impact. Technical report no. 9 on Contract N5ori-07833, NR-064-259. Appendix A: Proof of necessity of stationary hinges during period of constant impact load.

Numerical analysis of the process of buckling of elastic and inelastic columns, by J. P. Chawla. Polytechnic Institute of Brooklyn. Dept. of Aeronautical Engineering and Applied Mechanics. Sep 1950. 33p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photocopy $5.25. PB 114513

A numerical method of step-by-step integration of the dynamic equations for the transverse motion of an initially slightly curved column is presented. The results are presented in a non-dimensional form. Technical report no. 6. Contract no. N6onr-26308, Project no. 064-298. PIB AL 175.

Process of the buckling of elastic columns, by N. J. Hoff. Polytechnic Institute of Brooklyn.

Dept. of Aeronautical Engineering and Applied Mechanica. Dec 1949. 68p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.25, Photocopy $9.00. PB114519

The motion of a perfectly elastic initially slightly curved column is calculated when one of its ends is displaced axially at a constant speed in a perfectly rigid testing machine. Contract N6onr-26308. PIB AL 163.

Selected industrial films: Building and construction, a list and description of films available to business from industrial, commercial and government sources. U. S. Office of Technical Services. Jun 1954. 28p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111352

1. Building - Motion pictures - Bibliography 2. Building materials - Motion pictures - Bibliography 3. Construction industry - Motion pictures - Bibliography 4. Motion pictures, Educational - Bibliography 5. OTS SIF 12.

Strength and stiffness requirements for sandwich cores, by Structures Research Staff. Polytechnic Institute of Brooklyn. Dept. of Aeronautical Engineering and Applied Mechanica. Jan 1949. 102p photos, drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photocopy $14.00. PB 114427

Contract no. N6onr-263, Task order II, Project NR 033-079.
1. Sandwich construction - Core materials - Stiffness 2. Sandwich construction - Core materials - Strength 3. Sandwich construction - Core materials - Tests 4. Elasticity - Theory 5. Young's modulus 6. Plates, Sandwich - Buckling.

Tests of bonded and riveted sheet-stringer panels, by Leonard Mordfin and I. E. Wilks. U. S. National Advisory Committee for Aeronautics. Jun 1954. 45p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114336

Bending and compression tests were performed on 21 sheet-stringer panels of 75S-T6 aluminum alloy having alclad sheets nominally 0.051 inch thick and stringers nominally 3-1/2 inches apart. Nine panels had I-stringers bonded to the sheets with Araldite Type I adhesive, three panels had I-stringers bonded to the sheets with Metlbond adhesive, and nine panels had Z-stringers riveted to the sheets. All tests were carried to failure and strain and deformation measurements were made. The test results did not indicate any great superiority of one type of construction over the other but rather that the choice in any given case would depend upon the particular designs being compared. They also showed that the scatter of results obtained with bonded construction was not significantly greater than that obtained with riveted construction and that cleavage was not always the governing factor in the strength of bonded panels. NACA TN 3215.

Transition temperatures of structural steel beams with butt welded splices, by William J. Krefeld and George B. Anderson. Columbia University. Dept. of Civil Engineering. Oct 1953. 45p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photocopy $6.50. PB 114388

An investigation of the resistance of butt-welded and unwelded structural beams to impact loads at low winter temperatures including relative behavior of semikilled and fully killed steels, low-hydrogen versus ordinary electrodes, with and without cope holes. Contract N6-onr-271, T. O. 7. Technical report to Office of Naval Research and Welding Research Council of the Engineering Foundation. Preprinted from the Nov 1953 issue of Welding Research Supplement.

Transverse impact on beams and plates with arbitrary edge conditions, by A. Cemal Eringen. Illinois Institute of Technology. Dept. of Mechanics. Dec 1952. 78p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photocopy $10.25. PB 114506

Flexural deflections of several plates and beams under an unknown transverse, concentrated, time dependent force are solved for various edge conditions. Impacts on circular and rectangular plates are studied in detail. Contract no. N7onr-32909. Technical report no. 2.

Welded continuous frames and their components. Lehigh University. Dept. of Civil Engineering and Mechanics. Fritz Engineering Laboratory, Bethlehem, Pa. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Progress report 4: Connections for welded continuous portal frames. Part II (Section V): Theoretical analysis of straight knees, by A. A. Topractsoglou, Lynn S. Beedle, Bruce G. Johnston. Mar 1951. 50p drawings, diagrs, graphs (part fold), tables Microfilm $3.00, Photocopy $6.50. PB 114534

Fritz Laboratory report no. 205C.6B. For Report no. 4 part III see PB 114514; for no. 5 and 9 see PB 114508 and PB 114474. Other reports in Welding Journal (See list in no. 9).
1. Frames, Welded - Stress analysis 2. Connections, Welded - Stress analysis 3. Joints, Welded - Stress analysis 4. Joints, Welded - Plastic deformation - Theory.

Progress report no. 4: Part III: Discussion of test results and conclusions, by Lynn S. Beedle, A. A. Topractsoglou and Bruce G. Johnston.

Apr 1952. 80p diagrs, graphs, tables Microfilm $3.75, Photocopy $10.25. PB 114514

Fritz Laboratory report no. 205C.6C. Sponsored jointly by the Welding Research Council and the Department of the Navy with funds furnished by the following: American Institute of Steel Construction, American Iron and Steel Institute, Institute of Research, Lehigh University, Column Research Council (Advisory), Office of Naval Research (Contract no. 39303), Bureau of Ships, Bureau of Yards and Docks. Parts I and II of this paper have been published in the July and Aug 1951 issues of the Welding Journal Research Supplement, 539s, 397s.
1. Frames, Welded - Stress analysis 2. Connections, Welded - Stress analysis 3. Connections, Welded - Fatigue tests 4. Flanges, Steel - Stress analysis 5. Stability, Structural - Limit analysis.

Progress report V: Virtual displacement method for determining stability of beam columns above the elastic limit, by R. L. Ketter. Mar 1954. 51p diagrs, graphs Microfilm $3.00, Photocopy $7.75. PB 114508

This paper, which discusses the behavior of pin-ended, steel, wide-flange beam-columns, is the development of a virtual displacement method of solution to the inelastic instability problem. The method is equally applicable to the solution of elastic or inelastic beam-column problems but its greatest application seems to be in the inelastic field. Fritz Laboratory report no. 205 A.14.

Progress report no. 9: Plastic strength and deflections of continuous beams, by K. E. Knudsen, C. H. Yang, Bruce G. Johnston, and Lynn S. Beedle, with an appendix by Walter H. Weiskopf. May 1953. 17p diagrs, graphs Microfilm $2.00, Photocopy $2.75. PB 114474

Fritz Engineering Laboratory preprint no. 86. Reprinted from Welding Journal Research Supplement, May 1953. Appendix: Flexure of I sections above the elastic range.
1. Frames, Welded - Stress analysis 2. Beams, Structural - Bending moment 3. Beams, Structural - Plastic deformation 4. Beams, Steel - Welded - Plastic deformation 5. Stability, Structural - Limit analysis.

TEXTILES AND TEXTILE PRODUCTS

Abrasion damage of textile fibers. U. S. Office of the Quartermaster General. Research and Development Division. Textiles, Clothing and Footwear Branch. Jan 1954. 41p photos, diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.00. PB 111408

The inherent abrasion behavior of 14 different textile materials in the form of yarns was investigated and expressed by the abrasion damage, which is the the opposite of abrasion resistance. This was measured quantitatively by the fiber fineness (grex) destroyed in flexing around a steel bar under standardized conditions. Experimental work by W. Zagieboylo, figures prepared by J. Medernach, edited by N. E. Roberts. QMC TSR 85.

Mechanics of elastic performance of textile materials: Relation of certain geometric factors to the tear strength of woven fabrics, by N. A. Teixeira, M. M. Platt, and W. J. Hamburger. U. S. Office of the Quartermaster General. Research and Development Division. Textiles, Clothing and Footwear Branch. 1954. 61p diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 111409

Tongue-tear tests were made on samples of acetate fabrics, varying certain controlled factors: weave, texture, yarn twist and yarn structure. An analysis of the resulting experimental data showed certain relationships between these fabric factors and tear strength. A qualitative discussion was made of tearing action - the influence on tear strength of various types of fabric distortion at or near the tear, such as: yarn pull-out force; crimp; cover factors; and dimensional stability in the plane of the fabric. QMC TSR 86.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

Theoretical load distributions on wings with cylindrical bodies at the tips, by D. E. Hartley. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jun 1952. 40p drawings, diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.90. PB 114693

Addendum to Report no. Aero 2469. Cover date is 1954. S. O. code no. 23-9007-47.
1. Airplanes - Protuberances - Drag - Gt. Brit.
2. Wings - Span lift distribution - Gt. Brit.
3. Wings - Span load distribution - Gt. Brit.
4. Wings - Loading - Calculation - Gt. Brit.
5. Tanks, Fuel - Aircraft - Wing-tip - Gt. Brit.
6. Flow, Incompressible - Theory - Gt. Brit.
7. ARC CP 147 8. RAE RN Aero 2469, Addendum.

An investigation of the disturbances caused by a reflection plate in the working-section of a supersonic wind tunnel, by A. O. Ormerod. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Nov 1950. 16p photos, drawings, diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.90. PB 114665

Cover date is 1954. S. O. code no. 23-2799. Also published as RAE TNAero 2084.
1. Wind tunnels, Supersonic - Reflection plates - Effects - Gt. Brit. 2. Wind tunnels, Supersonic - Disturbances - Gt. Brit. 3. Wings - Pressure distribution - Gt. Brit. 4. ARC RM 2799 5. RAE TN Aero 2084.

Measurements of mid-chord pitching moment derivatives at high speeds, by J. B. Bratt and A. Chinneck. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jun 1947. 36p photos, drawings, diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $2.15. PB 114664

Cover date is 1954. S. O. code no. 23-2680.
1. Airfoils, Oscillating - Pitching moments - Gt. Brit. 2. Wind tunnels, High speed - Tests - Gt. Brit. 3. Mach number - Effect - Gt. Brit. 4. Flow, Supersonic - Theory - Gt. Brit. 5. ARC RM 2680.

Derivation of airworthiness performance climb standards, by F. G. R. Cook and A. K. Weaver. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jul 1948. 64p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $4.15. PB 114663

Cover date is 1954. S. O. code no. 23-2631.
1. Airplanes - Climb - Standardization - Gt. Brit. 2. ARC RM 2631.

List of current papers published by the Aeronautical Research Council, nos. 101-150. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1954. 5p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.15. PB 114695

S. O. code no. 23-9007-50.
1. Aeronautical research - Bibliography - Gt. Brit. 2. ARC CP 150.

Note on the effect of thickness and aspect ratio on the damping of pitching oscillations of rectangular wings moving at supersonic speeds, by W. E. A. Acum. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1953. 16p graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 114696

Cover date is 1954. S. O. code no. 23-9007-51.
1. Flow, Supersonic - Theory - Gt. Brit. 2. Wings, Rectangular - Damping - Effect of thickness - Gt. Brit. 3. Wings, Rectangular - Damping - Effect of aspect ratio - Gt. Brit. 4. Wings, Rectangular - Pitching - Effect of thickness - Gt. Brit. 5. Wings, Rectangular - Pitching - Effect of aspect ratio - Gt. Brit. 6. Wings, Rectangular - Velocity distribution Gt. Brit. 7. Wings, Rectangular - Wind tunnel tests Gt. Brit. 8. ARC CP 151.

Effect of rolling on fin-and-rudder loads in yawing manoeuvers, by D. R. Puttock. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jan 1953. 31p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 114697

Cover date is 1954. S. O. code no. 23-9007-53.
1. Airplanes - Rolling - Gt. Brit. 2. Airplanes - Loading - Gt. Brit. 3. Airplanes - Yaw - Gt. Brit. 4. Rudders, Aircraft - Loads - Gt. Brit. 5. ARC CP 153 6. RAE TN Struc 139.

Dynamic stability and control characteristics of a cascade-wing vertically rising airplane model in take-offs, landings, and hovering flight, by Marion O. McKinney, Louis P. Tosti and Edwin E. Davenport. U. S. National Advisory Committee for Aeronautics. Jun 1954. 45p drawings, graphs, table Available from National Advisory Committee for Aeronautics. Jun 1954. 45p drawings, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114398

An investigation has been made to determine the stability and control characteristics of a cascade vertically rising airplane model in the take-off, landing, and hovering phases of flight. The model had four propellers with the shaft axes essentially parallel to the fuselage axis and distributed along the span so that the four wings, which were arranged in cascade relation to turn the slipstream downward approximately 90°, were completely immersed in the slipstream of the propellers. NACA TN 3198.

Theoretical investigation of longitudinal response characteristics of a swept-wing fighter airplane having a normal-acceleration control system and a comparison with other types of systems, by Fred H. Stokes and Charles W. Mathews. U. S. National Advisory Committee for Aeronautics. Jul 1954. 50p diagrs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114647

An analysis is made of a normal-acceleration control system as applied to a swept-wing fighter airplane. The results show the response characteristics of the airplane-autopilot combination. The effects that changes in altitude and Mach number have on these response characteristics and the effects of changes in the parameter settings of the system are investigated. A comparison is also made of the normal-acceleration system with pitch-attitude, pitching-velocity, and angle-of-attack systems. NACA TN 3191.

Über eine dreidimensionale instabilität laminarer grenzschichten an konkaven wänden (On the three-dimensional instability of laminar boundary layers on concave walls), by H. Görtler. Translated by J. Vanier. Jun 1954. 32p diagrs, graphs

Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114551

A study is made of the stability of laminar boundary-layer profiles on slightly curved walls relative to small disturbances that result from vortices whose axes are parallel to the principal direction of flow. The result is an eigenvalue problem by which, for a given undisturbed flow at a prescribed wall, the amplification or decay is computed for each Reynolds number and each vortex thickness. For neutral disturbances (zero amplification) a critical Reynolds number is determined for each vortex distribution. The numerical calculation produces amplified disturbances on concave walls only. Part of a thesis submitted to University of Göttingen. Translated from Ges. d. Wiss. Göttingen, Nachr. a. d. Math. Bd. 2, nr. 1, 1940. NACA TM 1375.

Supersonic wind tunnel tests of eleven small aspect-ratio wings, by J. G. LaBerge. Canada. National Aeronautical Establishment. Mar 1954. 74p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photocopy $10.25. Available for exchange from National Aeronautical Establishment, Montreal Road, Ottawa, Canada. PB 114605

The lift, drag and pitching moment characteristics of eleven small aspect-ratio half-wing models mounted on a reflection plate were determined in the range of Mach numbers from 1.4 to 2.5 in the N.A.E. 10-inch supersonic tunnel. Eight of the models were of the cropped delta type while the remaining three had a cropped arrow plan form. Primarily, the investigation was conducted to assess the effect of aspect ratio on wing characteristics through a systematic variation of the taper ratio. NAEC LR-97.

Tables for the computation of wave drag of arrow wings of arbitrary airfoil section, by Frederick C. Grant and Morton Cooper. U. S. National Advisory Committee for Aeronautics. Jun 1954. 37p diagr, graphs, tables (part fold) Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114541

Tables and computing instructions are presented for the rapid evaluation of the wave drag of delta wings and of arrow wings having a ratio of the tangent of the trailing-edge sweep angle to the tangent of the leading-edge sweep angle from -1.0 to 0.8. The tables cover a range of both subsonic and supersonic leading edges. NACA TN 3185.

Some new drag data on the NACA RM-10 missile and a correlation of the existing drag measurements at M = 1.6 and 3.0, by Robert J. Carros and Carlton S. James. U. S. National Advisory Committee for Aeronautics. Jun 1954. 24p photos, drawing, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114552

Measurements of the zero-lift total drag of the NACA RM-10 missile were made on gun-launched, free-flight models at Mach numbers of 1.6 and 3.0 and corresponding Reynolds numbers of 3.0 million and 5.0 million. Results showed transition location to have an important effect on the drag. Results of this and several other investigations were correlated on the basis of considerations of Mach number, Reynolds number, transition location, and heat-transfer effects. NACA TN 3171.

Investigation of the use of rocket-powered models for gust-load studies with an application to a tailless swept-wing model at transonic speeds, by A. James Vitale, H. Press and C. C. Shufflebarger. U. S. National Advisory Committee for Aeronautics. Jun 1954. 36p photos, drawings, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 114441

Flight tests in continuous rough air at transonic speeds have been made of a tailless 45° sweptback-wing rocket model as part of a program to investigate the feasibility of using existing rocket-model techniques for obtaining gust-loads information. The results of airplane flight surveys for determining a working basis for forecasting and selecting suitable test days are presented. Use is made of power-spectral methods of generalized harmonic analysis in presenting both the experimental and calculated characteristics of load response in rough air of a configuration having low damping in pitch. NACA TN 3161.

PATENTS

Instruments

Patents abstracts no. 1: Instrumentation. Government-owned inventions available for license. U. S. Government Patents Board. Dec 1953. 70p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 111464

Listed in this book are 775 Government-owned inventions applicable to the instrumentation industry, covered by patents active as of December 31, 1953. For each invention the title of the invention, the United States patent number, the name of the inventor, the name of the Government agency administering the patent, and an abstract of the patent on the invention are given. Evaluation of the invention with respect to its industrial application is facilitated by an examination of the technical data contained in the abstract. GPB PA no. 1.

SELECTED LIST OF ATOMIC ENERGY REPORTS OF INTEREST TO INDUSTRY

The following Atomic Energy reports selected from recent issues of Nuclear Science Abstracts, an Atomic Energy Commission periodical, are presented here because of their interest and usefulness to general industry. Reports for which a price is given may be purchased in accordance with instructions on inside front cover of this publication. Others may be consulated at one of the following Industrial Information Depository Libraries: Atomic Industrial Forum, Inc., 260 Madison Ave., New York, N. Y.; John Crerar Library, 86 East Randolph St., Chicago, Illinois; Stanford Research Institute, Stanford, Calif.

The reports listed below are grouped under one or more of the following nine broad categories: Chemistry and Chemical Engineering; Construction and Civil Engineering; Electronics and Electrical Engineering; Health and Safety; Industrial Management; Mechanics and Mechanical Engineering; Metallurgy and Ceramics; Mining and Geology; and Nuclear Technology.

Reproduction in whole or part of any report listed herein is encouraged by the U. S. Atomic Energy Commission, subject to the approval of authors or originating sites. General inquiries from the industrial press about AEC-developed information should be directed to the Industrial Information Branch, Atomic Energy Commission, Washington 25, D. C.

Unclassified reports considered to be of special interest to general industry issued by AEC prior to July 1953 are listed or abstracted in a series of bibliographies (TID-3050), which may be purchased from the Office of Technical Services.

BIOLOGY AND MEDICINE

The ionization in free air around point sources of beta radiation, by R. K. Clark, S. S. Brar, L. D. Marinelli. Argonne National Laboratory. August 1954. 61p. Contract W-31-109-eng-38. Microfilm $3.25, Photocopy $9.00. (ANL-5201)

Health physics program for the Brookhaven Cosmotron, by F. P. Cowan and J. S. Handloser. Brookhaven National Laboratory. November 1953. 32p. $.35. (BNL-264)

Plant uptake of Sr^{90}, Ru^{106}, Cs^{137}, and Ce^{144} from three different types of soils, by Evan M. Romney, William A. Rhoads and Kermit Larson. University of California, Los Angeles. June 10, 1954. 28p. $.25. (UCLA-294)

CHEMISTRY AND CHEMICAL ENGINEERING

A new fluorimeter for the determination of uranium, by Paul Galvanek, Jr. and Thomas J. Morrison, Jr. American Cyanamid Company. May 27, 1954. Contract No. AT(49-1)-533. 38p. $.35. (ACCO-47)

Boral: A new thermal neutron shield, by V. L. McKinney and Theodore Rockwell, III. 1949. Oak Ridge National Lab. Decl. June 16, 1953. (ONRL-242). Supplement 1, by A. S. Kitzes and W. Q. Hullings. Jul 3, 1951. Decl. Dec. 4, 1952. (ORNL-981; AECD-3476). Issued as a combined report May 1954. 40p. Contract W-7405-eng-26. $.35. (AECD-3625)

Decontamination of liquid wastes by iron sulfide, iron hydroxide, and calcium phosphate precipitations. Final report, by C. S. Lowe, L. L. Bentz, J. R. Heiks, F. C. Mead, Jr., E. L. Murphy, E. Orban, F. Reichel, C.E. Shoemaker, and T. C. Tesdahl. Mound Lab. Dec 28, 1953. Decl. with deletions May 21, 1954. 21p. Contract AT-33-1-GEN-53. Microfilm $2.25, Photocopy $4.00. (AECD-3632; MLM-662(rev.))

Studies on the anodic polarization of zirconium and zirconium alloys, by Mario Maraghini, George B. Adams, Jr., and Pierre Van Rysselberghe. Oregon Univ. Sept. 1953. 61p. Contract AT(45-1)-535. Microfilm $3.25, Photocopy $9.00. (AECU-2797)

A. Study on the effect of radiation on heat resistance of bacterial spores, by H. Sugiyama. B. Study of the effect of radiation on staphylococcus enterotoxin, by M. J. Surgalla. C. Radiation studies on cheese spreads, by R. O. Wagenaar. Report no. 3 covering period July 1, 1953-March 31, 1954. Food Research Inst. 20p. Contract AT(1101)-231. Microfilm $2.00, Photocopy $2.75. (AECU-2901)

Preparation of methyl borate from boron trifluoride, by Raymond F. Barnes, Herbert Diamond, and Paul R. Fields. Argonne National Lab. Mar. 1954. 3p. Contract W-31-109-eng-38. Microfilm $1.50, Photocopy $1.50. (ANL-5243)

The neutron capture cross section of erbium isotopes, by Raymond F. Barnes. Argonne National Lab. July 1954. 6p. Contract W-31-109-eng-38. Microfilm $1.50, Photocopy $1.50. (ANL-5287)

The occurrence and control of radioactive entrainment in evaporative systems, by B. Manowitz, R. H. Bretton, and R. V. Horrigan. Brookhaven National Lab. Oct 1953. 27p. Microfilm $2.25, Photocopy $4.00. (BNL-1639)

Utilization of the gross fission products. Progress report no. 6, by L. E. Brownell, L. C. Anderson, H. J. Gomberg, L. L. Kempe, J. J. Martin, J. V. Nehemias, G. T. Van Wylen, and E. T. Vincent. Engineering Research Inst., Univ. of Mich. Mar. 1954. 266p. Contract AT(11-1)-162. Microfilm $9.25, Photocopy $34.25. (COO-198)

Mechanism of hindered settling and fluidization, by Albert L. Loeffler, Jr. and B. F. Ruth. Ames Lab. December 1953. 64p. Contract no. W-7405-eng-82. Microfilm $3.25, Photocopy $9.00. (ISC-468)

Automatic-reading viscosimeter, by J. H. Junkins. Carbide and Carbon Chemicals Co. (K-25). May 26, 1954. 10p. Contract W-7405-eng-26. Microfilm $1.50, Photocopy $1.50. (K-1128)

Diffusion studies. II. The permeability of palladium to hydrogen and to tritium, by O. N. Salmon and D. Randall. Knolls Atomic Power Lab. May 14, 1954. 54p. Contract no. W-31-109 Eng-52. Microfilm $3.00, Photocopy $7.75. (KAPL-984)

The absorption of tritium beta-particles in hydrogen and other gases, by L. M. Dorfman. Knolls Atomic Power Lab. Mar 11, 1954. 35p. Contract W-31-109-eng-52. Microfilm $2.50, Photocopy $5.25. (KAPL-1086)

Bactericidal effects of ionizing radiations as influenced by different conditions of atmosphere, medium, and physical state in which samples are irradiated. Quarterly progress report for the period October 1, 1953 to December 31, 1953, by Bernard E. Proctor and Samuel A. Goldblith. Massachusetts Inst. of Tech. Jan. 1, 1954. 73p. Contract AT(30-1)-1164, Report no. 6. Microfilm $3.75, Photocopy $10.25. (NYO-3342)

Quarterly progress report for the period January 1, 1954 to March 31, 1954, by Bernard E. Proctor and Samuel A. Goldblith. Massachusetts Inst. of Tech. Apr. 1, 1954. 11p. Contract AT(30-1)-1164, Report no. 7. Microfilm $2.00, Photocopy $2.75. (NYO-3343)

The crystal structures of oxalic acid dihydrate and alpha iodic acid as determined by neutron diffraction, by B. S. Garrett. Oak Ridge National Lab. August 16, 1954. 161p. Contract no. W-7405-eng-26. Microfilm $6.50, Photocopy $21.50. (ORNL-1745)

Polarography. A title list of unclassified report literature, by Hugh E. Voress, comp. Technical Information Service, AEC. May 6, 1954. 9p. Free. (TID-3057)

Strontium and calcium in municipal water supplies, their occurrence and removal, by George V. Alexander, Ralph E. Nusbaum, and Norman S. MacDonald. Atomic Energy Project, Univ. of Calif., Los Angeles. May 20, 1954. 27p. Contract AT-04-1-GEN-12. Microfilm $2.25, Photocopy $4.00. (UCLA-293)

Film boiling of flowing subcooled liquids (thesis), by Eugene Izoard Motte. Radiation Lab. Univ. of Calif., Berkeley. June 1954. 139p. Contract no. W-7405-eng-48. $.90. (UCRL-2511)

Preparation of metallic titanium by film boiling (thesis), by Alfred William Petersen. Radiation Lab. Univ. of Calif., Berkeley. April 1954. 55p. Contract no. W-7405-eng-48. $.45. (UCRL-2523)

Extraction of zirconium and hafnium with various fluorinated β-diketones, by E. H. Huffman, G. M. Iddings, R. N. Osborne, and G. V. Shalimoff. Radiation Lab., Univ. of Calif., Berkeley. April 5, 1954. 15p. Contract W-7405-eng-48. Microfilm $2.00, Photocopy $2.75. (UCRL-2536)

Studies in the nuclear chemistry of plutonium, americium, and curium and the masses of the heaviest elements (thesis), by Richard Alois Glass. Radiation Lab., Univ. of Calif., Berkeley. April 20, 1954. 202p. $1.25. (UCRL-2560)

ELECTRONICS AND ELECTRICAL ENGINEERING

A supplementary remote control manipulator, by R. V. Steele and H. B. Thomas. Livermore Research Lab., Calif. Research and Development Co. May 1954. 7p. Contract AT(11-1)-74. Microfilm $1.50, Photocopy $1.50. (LRL-129)

Oak Ridge National Laboratory reactor controls computer, by J. J. Stone and E. R. Mann. Oak Ridge National Lab. Apr. 20, 1954. 44p. Contract W-7405-eng-26. $.45. (ORNL-1632)

Cloud chamber for measuring the particle density of an aerosol, by Bernard G. Saunders. Oak Ridge National Lab. Feb. 19, 1954. 28p. Contract W-7405-eng-26. $.25. (ORNL-1655)

The gamma-ray pinhole camera with image amplifier, by Robert K. Mortimer, Hal O. Anger, and Cornelius A. Tobias. Radiation Lab., Univ. of Calif., Berkeley. Mar. 1954. 13p. Contract W-7405-eng-48. $.20. (UCRL-2524)

ENGINEERING

Power conversion in nuclear power plants, by T. T. Shimazaki and C. H. Robbins. North American Aviation, Inc. August 15, 1954. 54p. Contract no. AT 11-1-GEN-8. Microfilm $3.00, Photocopy $7.75. (NAA-SR-278)

Forced convection heat transfer in thermal entrance regions. Part III. Heat transfer to liquid metals, by William B. Harrison. Oak Ridge National Lab. June 25, 1954. 69p. $.60. (ORNL-915)

GEOLOGY AND MINERALOGY

Reconnaissance of Little Wild Horse Mesa Green River Desert, Emery County, Utah, by David N. Hinckley and John H. Volgamore. Grand Junction Operations Office. March 2, 1953. 14p. $.20. (RME-43)

Reconnaissance of the uranium deposits of the Lockhart Canyon - Indian Creek Area, San Juan County, Utah, by George P. Dix, Jr. Grand Junction Operations Office. May 15, 1953. 20p. $.25. (RME-4038)

HEALTH AND SAFETY

A. Study on the effect of radiation on heat resistance of bacterial spores, by H. Sugiyama. B. Study of the effect of radiation on staphylococcus enterotoxin, by M. J. Surgalla. C. Radiation studies on cheese spreads, by R. O. Wagenaar. Report no. 3 covering period July 1, 1953-March 31, 1954. Food Research Inst. 20p. Contract AT(11-1)-231. Microfilm $2.00, Photocopy $2.75. (AECU-2091)

Utilization of the gross fission products. Progress report no. 6, by L. E. Brownell, L. C. Anderson, H. J. Gomberg, L. L. Kempe, J. J. Martin, J. V. Nehemias, G. T. Van Wylen, and E. T. Vincent. Engineering Research Inst., Univ. of Mich. Mar. 1954. 266p. Contract AT(11-1)-162. Microfilm $9.25, Photocopy $34.25. (COO-198)

Collection efficiency of air-cleaning and air-sampling filter media, by J. J. Fitzgerald and C. G. Detwiler. Knolls Atomic Power Lab. Mar. 15, 1954. 55p. Contract W-31-109-eng-52. Microfilm $3.00, Photocopy $7.75. (KAPL-1088)

Bactericidal effects of ionizing radiations as influenced by different conditions of atmosphere, medium, and physical state in which samples are irradiated. Quarterly progress report for the period October 1, 1953 to December 31, 1953, by Bernard E. Proctor and Samuel A. Goldblith. Massachusetts Inst. of Tech. Jan. 1, 1954. 73p. Contract AT(30-1)-1164, Report no. 6. Microfilm $3.75, Photocopy $10.25. (NYO-3342)

Quarterly progress report for the period January 1, 1954 to March 31, 1954, by Bernard E. Proctor and Samuel A. Goldblith. Massachusetts Inst. of Tech. Apr. 1, 1954. 11p. Contract AT(30-1)-1164, Report no. 7. Microfilm $2.00, Photocopy $2.75. (NYO-3343)

An evaluation of the pulmonary radiation dosage from radon and its daughter products, by Jacob Shapiro. Atomic Energy Project, Univ. of Rochester. Apr. 9, 1954. 150p. Contract W-7401-eng-49. Microfilm $6.00, Photocopy $19.00. (UR-298)

Studies on the biosynthesis of hemin. I. Bone marrow, by J. E. Richmond and K. Salomon. Atomic Energy Project, Univ. of Rochester. June 18, 1954. 95p. Contract W-7401-eng-49. Microfilm $4.50, Photocopy $12.75. (UR-319)

The effects of a maintained body burden of polonium in rats. Part I. Pilot distribution and excretion experiment, by J. N. Stannard. Atomic Energy Project, Univ. of Rochester. Apr. 27, 1954. 21p. Contract W-7401-eng-49. Microfilm $2.25, Photocopy $4.00. (UR-329)

In vivo localization of labeled rat adrenal antibodies, by Irving L. Spar and William F. Bale. Atomic Energy Project, Univ. of Rochester. June 16, 1954. 15p. Contract W-7401-eng-49. Microfilm $2.00, Photocopy $2.75. (UR-332)

Study on flash burns: Evaluation of simultaneous monitoring of the carbon arc source, by Kelly M. Berkley and Thomas P. Davis. Atomic Energy Project, Univ. of Rochester. July 1, 1954. Contract W-7401-eng-49. 16p. Microfilm $2.00, Photocopy $2.75. (UR-334)

Study on flash burns: The influence of ultraviolet radiation on the production of cutaneous burns, by Kelly M. Berkley. Atomic Energy Project, Univ. of Rochester. July 1, 1954. 17p. Contract no. W-7401-eng-49. Microfilm $2.00, Photocopy $2.75. (UR-335)

Organic synthesis of carbon-14 labeled hematoporphyrin dimethyl ester, by Alan K. Bruce. Atomic Energy Project, Univ. of Rochester. June 17, 1954. 51p. Contract no. W-7401-eng-49. Microfilm $3.00, Photocopy $7.75. (UR-339)

Graduate training programs at the University of Rochester Atomic Energy Project, by H. A. Blair and J. N. Stannard. Atomic Energy Project, Univ. of Rochester. June 29, 1954. 53p. Contract no. 7401-eng-49. Microfilm $3.00, Photocopy $7.75. (UR-341)

Studies on the effect of radiation protection factor on incorporation of formate-C^{14} into nucleic acid purines in x-irradiated mice, by R. K. Main, L. J. Cole and V. P. Bond. U. S. Naval Radiological Defense Lab. June 3, 1954. 35p. Microfilm $2.50, Photocopy $5.25. (USNRDL-444)

INSTRUMENTATION

A mass spectrometer for routine solid analyses, by C. M. Stevens and M. G. Inghram. Argonne National Lab. April 1954. 12p. Contract W-31-109-eng-38. Microfilm $2.00, Photocopy $2.75. (ANL-5251)

The SRP standard windowless flow counter, by C. A. Prohaska. E. I. du Pont de Nemours & Co. April 1954. 28p. Contract AT(07-2)-1. Microfilm $2.25, Photocopy $4.00. (DP-45)

The SRP standard Geiger-Mueller Counter, by C. A. Prohaska. E. I. du Pont de Nemours & Co. May 1954. 27p. Contract AT(07-2)-1. Microfilm $2.25, Photocopy $4.00. (DP-61)

A count rate circuit with a grounded output, by L. Cathey. E. I. du Pont de Nemours & Co. August 1954. 9p. Contract AT(07-2)-1. Microfilm $1.50, Photocopy $1.50. (DP-71)

Operation and maintenance instructions for gamma scintillation monitor - model III, by R. E. Connally. Hanford Works. October 1, 1953. 14p. Contract no. W-31-109-eng-52. $.20. (HW-29349)

Temperature controller, by G. L. Smith. Phillips Petroleum Co. April 27, 1954. 11p. Contract no. AT(11-1)-205. Microfilm $2.00, Photocopy $2.75. (IDO-16137)

Time interval indicator, by R. A. Manhart. Livermore Research Laboratory. May 1954. 10p. Contract No. AT(11-1)-74. $.10. (LRL-127)

An instrument for the measurement of the time of fall of a plummet in a pressure vessel. Final report, by A. J. Rogers, J. W. Heyd, W. L. Hood, and J. A. Williamson. February 27, 1952. Monsanto Chemical Co. 13p. Contract no. AT-33-1-GEN-53. Microfilm $2.00, Photocopy $2.75. (MLM-805)

Absolute alpha counting I: Determination of backscattering factors and ranges, by M. L. Curtis and J. W. Heyd. Monsanto Chemical Co. April 10, 1953. 12p. Contract no. AT-33-1-GEN-53. Microfilm $2.00, Photocopy $2.75. (MLM-834)

Windowless absorption counter for routine energy measurement of soft radiations, by M. L. Curtis

and J. W. Heyd. Monsanto Chemical Co. April 10, 1953. 17p. Contract no. AT-33-1-GEN-53. Microfilm $2.00, Photocopy $2.75. (MLM-842)

A nonlinear pulse amplifier of wide dynamic range, by W. H. Baker. Monsanto Chemical Co. May 5, 1953. 18p. Contract no. AT-33-1-GEN-53. Microfilm $2.00, Photocopy $2.75. (MLM-851)

The preparation of plastic and metallic absorbers, by J. S. Stanton and J. W. Heyd. Monsanto Chemical Co. June 17, 1953. 17p. Contract no. AT-33-1-GEN-53. Microfilm $2.00, Photocopy $2.75. (MLM-858)

Apparatus for regulating current in moving-boundary experiments, by W. R. Rathkamp and P. S. Baker. Oak Ridge National Lab. June 8, 1954. 5p. Contract no. W-7405-eng-26. $.10. (ORNL-1704)

Apparatus for the pyrohydrolytic determination of fluoride and other halides, by C. D. Susano, J. C. White, and J. E. Lee, Jr. Oak Ridge National Lab. June 10, 1954. 8p. Contract no. W-7405-eng-26. Microfilm $1.50, Photocopy $1.50. (ORNL-1744)

Ball potential detector, by C. N. Winningstad. Radiation Lab., Univ. of Calif., Berkeley. January 1952. 1 p. Contract no. W-7405-eng-48. $.20. (UCRL-1652)

MECHANICS AND MECHANICAL ENGINEERING

Economics of central-station power plants. Preliminary compilation of reference data, by R. T. Barham, R. C. Gerber, E. J. Haven, W. J. Starkey, and J. E. Viscardi. Livermore Research Lab., Calif. Research and Development Co. May 1954. 78p. Contract AT(11-1)-74. Microfilm $3.75, Photocopy $10.25. (LRL-128)

METALLURGY AND CERAMICS

Effect of cyclotron irradiation on creep of aluminum. Final report, by M. R. Jeppson, R. L. Mather, and H. P. Yockey. North American Aviation, Inc. Feb. 16, 1954. 30p. Contract AT-11-1-GEN-8. Microfilm $2.25, Photocopy $4.00. (AECD-3631)

Quantitative substructure and tensile property investigations of nickel alloys, by B. Ancker, E. R. Parker, and T. H. Hazlett. Minerals Research Lab., Inst. of Engineering Research, Univ. of Calif., Berkeley. Apr. 1954. 39p. Contract AT-11-1-GEN-10, Technical report no. 14. Microfilm $2.50, Photocopy $5.25. (AECU-2870)

Phase diagrams of zirconium-base binary alloys. Report no. 14. The zirconium-nitrogen system. Report no. 4 - Summary. Armour Research Foundation. April 1, 1953-March 31, 1954, by R. F. Domagala and D. J. McPherson. Mar. 31, 1954. 47p. Contract AT(11-1)-149. Microfilm $2.75, Photocopy $6.50. (COO-190)

The design of apparatus for measuring the creep of germanium, by Richard Arthur Pizarro. Purdue University. May 1954. 44p. Contract no. AT(11-1)-125. $.45. (COO-191)

The preferred orientation of cold-rolled uranium foil, by W. E. Seymour. Knolls Atomic Power Lab. Nov. 1953. 35p. Contract W-31-109-Eng-52. Microfilm $2.50, Photocopy $5.25. (KAPL-1081)

A defocusing effect observed in X-ray spectrometry, by W. E. Seymour. Knolls Atomic Power Lab. Mar. 31, 1954. 17p. Contract W-31-109-eng-52. Microfilm $2.00, Photocopy $2.75. (KAPL-1092)

The stress-rupture strength of type 347 stainless steel under cyclic temperature, by E. E. Baldwin. Knolls Atomic Power Lab. June 1, 1954. 65p. Contract no. W-31-109 Eng-52. Microfilm $3.25, Photocopy $9.00. (KAPL-1147)

A modified Bridgman furnace for the growing of zinc monocrystals, by J. R. Gaskill. Livermore Research Lab., Calif. Research and Development Co. Apr. 1954. 20p. Contract AT(11-1)-74. Microfilm $2.00, Photocopy $2.75. (LRL-126)

High temperature liquid metal circulating system, by R. D. Keen and others. North American Aviation, Inc. August 1, 1954. 45p. Contract AT-11-1-GEN-8. Microfilm $2.75, Photocopy $6.50. (NAA-SR-985)

Study of metal-ceramic interactions at elevated temperatures. Quarterly progress report for the period ending July 1, 1954, by F. H. Norton and W. D. Kingery. Massachusetts Institute of Technology. July 1, 1954. 15p. Contract no. AT(30-1)-1192. Microfilm $2.00, Photocopy $2.75. (NYO-6295)

The measurement of thermal conductivity of refractory materials. Quarterly progress report for the period ending April 1, 1954, by F. H. Norton, W. D. Kingery, et al. Massachusetts Inst. of Tech. Apr. 1, 1954. 8p. Contract AT(30-1)-960. Microfilm $1.50, Photocopy $1.50. (NYO-6442)

The measurements of thermal conductivity of refractory materials. Quarterly progress report for the period ending July 1, 1954, by F. H. Norton and W. D. Kingery. Massachusetts Inst. of Tech. July 1, 1954. 8p. Contract no. AT(30-1)-960. Microfilm $1.50, Photocopy $1.50. (NYO-6445)

Fundamentals of cold working and recrystallization. Progress report no. 14, by B. L. Averbach, M. Cohen, S. Allen, M. F. Comerford, and C. Houska. Massachusetts Inst. of Tech. Mar. 31, 1954. 4p. Contract AT(30-1)-1002, Scope 3. Microfilm $1.50, Photocopy $1.50. (NYO-7070)

Reconnaissance of Red Rock District, Cove Mesa, and Kinusta (Tree) Mesa, Arizona, by John W. King. Division of Raw Materials, AEC. February 1, 1951. 11p. $.20. (RMO-755)

Self-diffusion of metals and associated phenomena. Part 10. Progress report for April 1, 1953 to October 1, 1953, by R. W. Balluffi, F. D. Rosi, and L. L. Seigle. Sylvania Electric Products, Inc., Atomic Energy Div. Apr. 5, 1954. 6p. Contract AT-30-1-GEN-367. Microfilm $1.50, Photocopy $1.50. (SEP-152)

Self-diffusion of metals and associated phenomena. Part II. Final progress report for October 1, 1953 to March 31, 1954, by R. W. Balluffi, F. D. Rosi, and L. L. Seigle. Sylvania Electric Products, Inc. Atomic Energy Div. Apr. 5, 1954. 9p. Contract AT-30-1-GEN-367. Microfilm $1.50, Photocopy $1.50. (SEP-153)

Rolling 18-8 stainless steel powder into strip, by S. Storchheim, J. Nylin and B. Sprissler. Sylvania Electric Products, Inc. Atomic Energy Division. July 5, 1954. 55p. Contract no. AT-30-1-GEN-366. Microfilm $3.00, Photocopy $7.75. (SEP-161)

Titanium metallurgy. A Bibliography of Unclassified Report Literature, compiled by Hugh E. Voress. Technical Information Service, AEC. April 14, 1953. 57p. $.55. (TID-3039)

NUCLEAR TECHNOLOGY

Radiological monitoring during a water boiler-type reactor startup, by R. A. Sulit. Livermore Research Lab., Calif. Research and Development Co. March 1954. 38p. Contract AT-(11-1)-74. $.35. (LRL-99)

Economics of central-station power plants. Preliminary compilation of reference data, by R. T. Barham, R. C. Gerber, E. J. Haven, W. J. Starkey, and J. E. Viscardi. Livermore Research Lab., Calif. Research and Development Co. May 1954. 78p. Contract AT(11-1)-74. Microfilm $3.75, Photocopy $10.25. (LRL-128)

An up-to-date review of the principles of heat transfer, with particular application to nuclear power, by Charles F. Bonilla. Gibbs and Cox, Inc. 1949. 33p. $.20. (M-4476)

The attenuation of neutrons by air ducts in shields, by A. Simon and C. E. Clifford. Oak Ridge National Lab. Mar. 8, 1954. Decl. Apr. 22, 1954. 24p. Contract W-7405-eng-26. Microfilm $2.25, Photocopy $4.00. (ORNL-1217(rev.)

Oak Ridge National Laboratory reactor controls computer, by J. J. Stone and E. R. Mann. Oak Ridge National Lab. Apr. 20, 1954. 44p. Contract W-7405-eng-26. $.45. (ORNL-1632)

Nuclear engineering. A selected list of references. Technical Information Service, AEC. Apr. 1954. 40p. $.35. (TID-3055)

A pulsed neutron source, by E. Frank Martina and Val J. Ashby. Univ. of Calif. Radiation Lab. Livermore Site. June 11, 1954. 11p. Contract no. W-7405-eng-48. Microfilm $2.00, Photocopy $2.75. (UCRL-4349)

Excitation function measurements for (o, 2n) reactions with Ti^{48}, Cr^{52}, and Fe^{56}, by Warren H. Burgus, George A. Cowan, James W. Hadley, Wilmot Hess, M. Lynn Stevenson, Theodore Shull, and Herbert F. York. Radiation Lab., Univ. of Calif., Livermore. Feb. 1954. 37p. Contract W-7405-eng-48. $.25. (UCRL-4292)

PHYSICS

On the one-body model of alpha radioactivity III. Non-s-state decay, preformation factors, model variations, general discussion, by G. H. Winslow and O. C. Simpson. Argonne National Lab. April 26, 1954. 51p. Contract W-31-109-eng-38. Microfilm $3.00, Photocopy $7.75. (ANL-5277)

Report on biological, medical and biophysics programs. Part I. Quarterly report of Biological and Medical Research Division. Part II. Semi-annual report of Radiological Physics Division. Argonne National Laboratory. July 1954. 150p. Contract W-31-109-eng-38. Microfilm $6.00, Photocopy $19.00. (ANL-5288)

The inelastic scattering cross section of lead, by Sophie Oleksa. Brookhaven National Lab. December 1953. 14p. Contract no. AT 30-1-GEN-16. $.25. (BNL-273)

Variations of electrophotoluminescence phenomena with frequency of applied field, by Keith William Olson and G. C. Danielson. Ames Lab. June 1954. 101p. Contract no. W-7405-eng-82. Microfilm $4.75, Photocopy $14.00. (ISC-492)

Thickness measurements of thin films by multiple-beam interferometry, by T. W. Bartlett and Frances L. Ball. Carbide and Carbon Chemicals Co. Technical Division. K-25 Plant. June 16, 1954. 12p. Contract no. W-7405-eng-26. $.20. (K-1135)

The structure of a shock front in argon, by John W. Bond, Jr. Los Alamos Scientific Lab., Univ. of Calif. July 1, 1954. 175p. Contract W-7405-eng-36. Microfilm $6.75, Photocopy $22.75. (LA-1693)

Spark damage and high voltage breakdown of metals in vacuum at 14 megacycles. Preliminary report, by Warren W. Chupp and Harry G. Heard. Radiation Lab., Univ. of Calif., Berkeley. Jan. 1954. 72p. Contract no. W-7405-eng-48. $.55. (UCRL-1962(Rev.)

The behavior of electrode materials subjected to energetic high vacuum R. F. sparking in the megavolt range, by Warren W. Chupp, Harry G. Heard and Eugene J. Lauer. Radiation Lab., Univ. of Calif., Berkeley. Jan. 14, 1954. 33p. Contract no. W-7405-eng-48. $.35. (UCRL-2099(Rev.)

High energy particle data, by Beverly Hill Willis. Radiation Lab., Univ. of Calif., Berkeley. Oct. 1953. 42p. Contract no. W-7405-eng-48. $.45. (UCRL-2426)

High energy (d,p) reactions (thesis), by Louis M. Slater. Radiation Lab., Univ. of Calif., Berkeley. 80p. Contract no. W-7405-eng-48. $.60. (UCRL-2441)

Production cross sections for positive and negative pions from carbon initiated by 340-Mev protons (thesis), by Walter F. Dudziak. Radiation Lab. Univ. of Calif., Berkeley. April 1954. 92p. Contract W-7405-eng-48. $.70. (UCRL-2564)